Retailers test gadgets that help shoppers find what they need but require lots of IT integration

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KNOWLEDGE CENTER NETWORKING

Clockwise from top: John Haltom, Erlanger Health System; Thomas Dunkerley, The Seattle Times; Charles Goodall, GlaxoSmithKline

VoIP Goes Mainstream

Voice-over-IP isn't cheap or easy, but companies are diving into the technology in a big way. We profile five users who say the benefits definitely outweigh the costs. **Page 29**

ONLINE **Get VoIP data and case studies as downloadable PowerPoint slides. QuickLink a5310**

Oracle Rivals Must Wait To Win PeopleSoft Users

Microsoft and SAP push for ERP migrations, but IT managers say they're locked into apps

BY MARC L. SONGINI

Competitors may be circling the PeopleSoft customer base like hungry sharks, but users agree that even those companies that want to abandon new owner Oracle Corp. face rough seas.

Last week, Microsoft Corp. launched an outreach program aimed at convincing users of PeopleSoft Inc.'s software to switch to its ERP and CRM applications. Microsoft's program includes financial incentives and consulting services.

Other vendors said they haven't started formal migration programs, but users report that some are aggressively courting them. For example, an SAP AG spokesman said that his company has reached out to PeopleSoft users ever since Oracle announced its intention to buy the firm in June 2003.

ONLINE QUICKLINK a3320

In an informal poll of 11 PeopleSoft customers, four of them said they would consider migrating to another vendor. For many users, the decision depends on whether Oracle can deliver on its promise to support and upgrade PeopleSoft's World, EnterpriseOne and Enterprise software lines.

PeopleSoft user Fred Pond, director of information services at Schnitzer Steel Industries Inc. in Portland, Ore., said he will be closely watching Oracle's actions over the coming months. But he acknowledged that even a decision to change would lead to a long conversion process.

If concerns arise over the next 18 months, Schnitzer will first assemble a team to con-

PeopleSoft, page 43

Hack Exposes Lax Security In Academia

IT managers push for tighter data controls

BY JAIKUMAR VIJAYAN

George Mason University said last week that information about more than 30,000 of its students and employees had been compromised, a disclosure that served as yet another reminder of the difficulty of securing university networks.

Officials at George Mason said unidentified hackers had breached the Fairfax, Va.-based school's main ID server and gained access to the names, photos and Social Security numbers of about 28,000 students and 4,000 staffers. The intrusion was discovered during a routine review of system files on Jan. 2 and may have occurred as far back as November, according to a spokesman for George Mason.

"It appears that the hackers were looking for access to other campus systems rather than specific data," Joy Hughes, the

Academia, page 12

INSIDE THIS ISSUE

DHL Program Seeks to Hold On to IT Staff

Courier plans perks to reward, keep workers

BY THOMAS HOFFMAN

In a move reminiscent of the aggressive IT employee retention strategies that were common during the dot-com boom, DHL is launching a personalized rewards and recognition program for its 1,200 U.S. IT workers, executives at the express delivery company said last week.

While IT management experts said that DHL's so-called "carrot a day" philosophy isn't unique, it does represent the first proactive and notable IT worker recognition effort they have witnessed since the technology bubble burst in 2000.

DHL, page 43

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Viktor Portmann
Project Manager, *Department of Foreign Affairs, Switzerland*

Microsoft Windows Server System makes it easier for Switzerland's Federal Department of Foreign Affairs (DFA) to manage the infrastructure serving their embassies and consulates in 156 countries. Here's how: By using Systems Management Server 2003 and Microsoft Operations Manager 2005, DFA can automatically update its 500 remote servers from a central location, saving over $600,000 in travel expenses alone in the past year. They've also been able to reduce the time and cost of maintenance, boost user productivity, and find the time to better prepare for expansion. Software that's easier to manage is software that helps you do more with less. To get the full DFA story or to find a Microsoft Certified Partner, go to **microsoft.com/wssystem**

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CONTENTS

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CIOs on the Board

In the Management section: CIOs have a uniquely comprehensive view of what makes companies tick, so why are so few, like ThoughtWorks' Carl Dill, invited to join corporate boards of directors? **Page 25**

Notes From Security School

In the Technology section: Training programs at the SANS Institute teach you how hackers operate and what you can do to better protect your networks. *Computerworld* gives you a seat right in front of the teacher. **Page 19**

NEWS

4 **Business Objects injects** a healthy dose of Crystal Reports technology into its XI business intelligence software.

5 **Wells Fargo buys into** electronic check-image sharing with its investment in Viewpointe Archive Services.

5 **Siebel bids** to distance itself from hosted CRM rivals such as Salesforce.com by adding preconfigured features to its OnDemand hosted service.

8 **McData unveils** its 256-port, multiprotocol il0K switch.

9 **Retailers Stop & Shop** and Metro AG are piloting emerging in-storc shopping technologies, such as an intelligent shopping cart.

10 **Global Dispatches:** A Chinese province taps AMD, Lenovo and a third vendor to supply 26,000 systems for a long-distance education project.

10 **IT skills are lacking** in the federal government, and President Bush's staff is working oo plans to close the gap.

ONLINE

ONLINE DEPARTMENTS

Breaking News
QuickLink a1510

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QuickLink a1430

Knowledge Centers
QuickLink a2570

Computerworld Store
QuickLink a2420

OPINIONS

6 **On the Mark: Mark Hall** reports on Intel's plans for PC motherboards with integrated desktop management features.

14 **Don Tennant** wonders if CFOs may be wishing they'd been a little less stingy over the past few years now that the IT joh market is turning around.

14 **Thornton A. May** pinpoints why the IT marketing model is no longer effective and suggests how vendors can get back oo track.

15 **Pimm Fox** isn't surprised hy the greed surrounding the Google IPO, hut he'd like to believe a new model for start-ups could be possihle.

23 **Curt A. Monash** advises which vendors are the best sources of informatioo as you set out to choose an analytics supplier.

27 **Bart Perkins** suggests some strategies for getting the husiness to see the light regarding spending on unsexy but essential IT infrastructure.

44 **Frankly Speaking: Frank Hayes** knows that the Mac Mini isn't about to win the hearts and minds of corporate IT, hut wheo Apple innovates, interesting things happen.

DEPARTMENTS/RESOURCES

At Deadline Briefs 4
News Briefs 6, 6
Letters 15
IT Careers 38
Company Index 42
How to Contact CW 42
Shark Tank 44

KNOWLEDGE CENTER NETWORKING

VoIP Goes Mainstream

EDITOR'S NOTE: It isn't cheap or easy. But major corporations are getting cost savings and other benefits from taking the plunge into converged voice/data networks. We offer in-depth case studies of five voice-over-IP adopters. **PACKAGE BEGINS ON PAGE 29.**

30 VoIP: Ready for Prime Time. VoIP technology is taking hold, but a killer app and qualified integrators are still needed.

CASE STUDIES

32 Newspaper Centralizes Call Routing. Thomas Dunkerley, IT communications manager at The Seattle Times (right), led a VoIP project that reduced monthly phone bills by 20% to 25%.

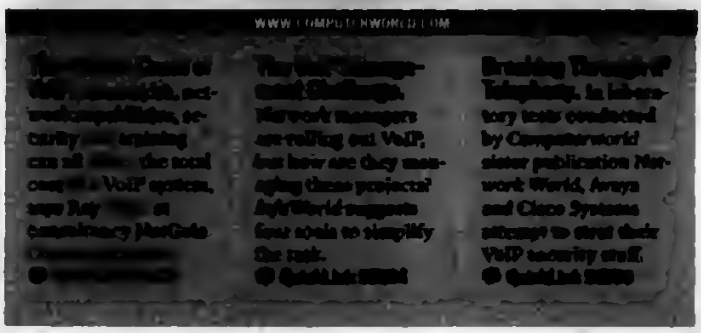
33 Small Project Works Out the Kinks. Charles Goodall (right), manager of global voice technology and architecture at GlaxoSmithKline, learned lessons from a pilot project that the company will put to use in its global VoIP rollout.

34 Wireless Joins Hospital's VoIP Mix. Erlanger Health System moved its IP phone population to an IP PBX to enable caregivers to communicate when mobile and to eventually allow doctors to consult with patients via videoconference.

35 Call Centers Put on Speed Dial. To better serve patients, Magellan Health Services now reroutes and balances calls across a distributed staff with its VoIP deployment.

36 Fashion Designer Gets Hip to IP. By piggybacking voice onto a routed IP network, Liz Claiborne has reduced its number of dedicated T1 lines and long-distance calling charges.

37 Opinion: VoIP's security risks aren't worth mere cost savings, says columnist Mark Hall. But the right application might change that.



AT DEADLINE

FBI May Scrap Anti-Terror Program

An FBI spokesman, who asked not to be named, confirmed published reports last week that the planned Virtual Case File system may be scrapped because officials don't believe the $170 million case management system is scalable or secure enough. The system is aimed at helping agents share information in the war on terror. A spokesman for Science Applications International Corp. in San Diego declined to comment on the FBI's plans but contended that the supplier delivered a fully functional system in December.

Cisco to Buy WLAN Switch Maker

Cisco Systems Inc. last week said it has agreed to buy San Jose-based wireless LAN switch vendor Airespace Inc. for $450 million in stock. The deal gives Cisco a WLAN switching product line that can help small and midsize businesses deploy secure 802.11-based networks. The deal is expected to close by April 30.

Oracle Laying Off 5,000 Workers

Oracle Corp. late Friday said it will cut 5,000 workers over the next week as part of its effort to bring recently acquired PeopleSoft Inc. into the fold. The company also said it plans to upgrade PeopleSoft applications through Version 9.

AMD Cuts Q4 Projections

Advanced Micro Devices Inc. said it expects to report an overall profit for its fourth quarter, which ended Dec. 26, and show an operating loss in its memory division. The Sunnyvale, Calif.-based chip maker last week predicted that its operating income will decline significantly from the third-quarter figure of $68.4 million.

Business Objects Adds Crystal Reports Tools

New features aim to bring business intelligence capabilities to casual users

BY HEATHER HAVENSTEIN

BUSINESS OBJECTS SA last week unveiled Business Objects XI, which includes back-end integration of the reporting tools acquired from Crystal Decisions Inc. in 2003 with the company's business intelligence offering.

Officials at the Paris-based firm said integration with Crystal Reports and other new features will enable a growing number of enterprise users to tap into reporting, query and analysis, and performance management capabilities. Business Objects XI also includes support for embedding BI in Microsoft Office applications and additional technical and business metadata that can provide context for reports and dashboards.

The new version quietly began shipping late last month, prior to last week's formal introduction.

The oew features are designed to take BI — traditionally limited to business analyst power users — to more casual users, said Chris Caren, Business Objects vice president of corporate marketing.

"We've done a tremendous amount to simplify the user experience. We let end users establish a live connection between an Office document and the BI platform," Caren said.

Emergency Medical Associates (EMA), a Livingston, N.J.-based emergency-room staffing company and a Version XI beta tester, previously used Business Objects and Crystal Decisions tools separately to deliver electronic patient records stored in a data warehouse to end-user dashboards.

Before XI, EMA would have had to deploy separate user interfaces at different hospital locations for access to Crystal reports from the Web. The integrated system provides a single point of entry for analytics, regardless of whether they were generated from the data warehouse or the operational reporting system, said Jonathan Rothman, EMA's director of data management.

Hiding the Technology

Rothman said the user interface in the XI version simplifies tasks like scheduling metrics and refreshing analytics. "The most important thing is hiding the technology from the end user, whose main interest is obtaining their analytics," he said.

Rothman said he would also like Business Objects to enhance the functionality of the tools used to create Web-based reports to offer support for linking multiple data providers and other advanced features available in the PC-based report-generation tools.

Gene Fichtenholz, senior software engineer at San Jose-based Meriwest Credit Union, said the online analytical processing intelligence tool in XI is much better than the one in Business Objects 6.0. Creating OLAP reports was slow and difficult in the earlier version, Fichtenholz said. In addition, XI brings reporting closer to the user with the new user interface that "looks almost like Excel on steroids," he said.

With Version XI, Business Objects has positioned itself well as a single supplier of BI technology, said Keith Gile, an analyst at Forrester Research Inc. in Cambridge, Mass.

Howard Dresner, an analyst at Gartner Inc., said that while XI allows enterprises to push basic BI functionality out to more users, companies need to ensure that increased access doesn't lead to "information communism," where everybody gets the same information and that information isn't tailored to their needs.

"IT, left to their own devices, will just take a carte blanche approach and give them everything," Dresner said. 51899

MORE THIS ISSUE

For more about business intelligence tools, read Curt Monash's column on page 23.

MORE ONLINE

Read a Q&A with Business Objects CEO Bernard Liautaud

QuickLink 51871
www.computerworld.com

SAP Brings Business One to Windows Shops

SAP AG is looking to help Windows shops running its ERP applications get business intelligence on the cheap.

To that end, SAP last week announced plans to add technology acquired from BI vendor iLytix Systems AS to its SAP Business One line of materials requirement planning and ERP applications.

With the rollout of a new XL Reporter tool for Business One, which has long been aimed at small and midsize firms, SAP wants to help smaller companies run reports and perform analysis without expert help. XL Reporter can interoperate with Microsoft Excel and Outlook to help users of the programs export SAP data directly to their desktops for slicing and dicing.

SAP is adding the features following the acquisition of Oslo-based iLytix, which was revealed last week. Terms of the deal weren't disclosed.

Errors Reduced

XL Reporter should cut down on the time and errors associated with manually extracting and reformatting data for use in a report, said Gadi Shamia, vice president of solution management for SAP Business One.

XL Reporter could simplify the creation of multiple reports, said Joshua Goldman, co-CEO of Laservall North America LLC. The Pawtucket, R.I.-based company provides laser-marking equipment and runs Business One to support its CRM, financial and inventory processes. He hasn't used the tool yet but said he's looking forward to its availability.

Currently, Laservall must rely on the canned reports provided by SAP, which Goldman said are difficult to reformat. Customizing different reports for various and users would require expensive training – something the company doesn't want to spend money on after its considerable investment in its initial ERP rollout, he added.

XL Reporter will ship by the and of this quarter and will be added as part of the standard Business One upgrade at no extra charge.

– Marc L. Songini

Wells Fargo Buys Into Check-Image Sharing

Bank plans to use Viewpointe's archive to store and share electronic checks

BY LUCAS MEARIAN

Wells Fargo & Co. last week announced that it has bought into Viewpointe Archive Services LLC in order to share electronic check images with other banks and reduce the amount of paper checks it ships around the country.

The use of Viewpointe's check archive and ImageShare exchange service also will free Wells Fargo from the need to set up connections with individual banks.

Viewpointe, which was founded in 2000 by Bank of America Corp., J.P. Morgan Chase & Co. and IBM, enables members to send check images to a central repository. Banks can then set rules for sharing the images with one another.

"The opportunity now with Viewpointe is to move to something we call 'image on demand,' which is loading images onto a common archive, as opposed to shipping those images and exchanging them one bank at a time," said Mitch Christensen, executive vice president of payment strategies at Wells Fargo.

Christensen said the San Francisco-based bank has been sharing check images with the Federal Reserve Bank and The Clearing House in New York for years through its own data warehouse.

New Territory

But Wells Fargo, which captures 4.5 billion check images each year, has never used Viewpointe's services and will have to establish a network connection with the New York-based archiving company.

The bank also has to migrate its existing check images to Viewpointe and create a system to transmit new images as they're captured at its regional scanning centers.

In addition, Wells Fargo is about to kick off a 12-to-18-month project to install check-image scanners at the teller windows in its 6,000 branch offices throughout the U.S. Images captured on those devices will be shipped directly to Viewpointe as well, according to Christensen.

Financial terms of the deal between Wells Fargo and Viewpointe weren't disclosed, and Christensen declined to say how much it will cost the bank to link to Viewpointe's systems and deploy the branch-office scanners. He also wouldn't say how much Wells Fargo is expected to save on costs by using the Viewpointe service.

David Medeiros, an analyst at TowerGroup in Needham, Mass., said Wells Fargo's foray into check-image sharing will likely push banks that regularly do business with it to become Viewpointe users themselves.

The door for exchanging check images between banks was opened by the Check Clearing for the 21st Century Act, or Check 21, which took effect Oct. 28. Check 21 allows banks to substitute image-replacement documents for original paper checks, which can then be destroyed.

Viewpointe members SunTrust Banks Inc. in Atlanta and First Horizon National Corp. in Memphis last month claimed to be the first banks in the U.S. to agree to share check images [QuickLink 51634].

And last week, the banks began sharing those images on a test basis, said Lenora Thompson, group vice president of SunTrust's banking services division.

Wells Fargo's entry "moves us closer to our long-term vision of not having to move [electronic] checks at all until they're needed," Thompson said. **51944**

Siebel Targets Salesforce.com With OnDemand 6 Hosted CRM Service

Industry-specific packages included in new release

BY MARC L. SONGINI

In an bid to distance itself from rivals like Salesforce.com Inc., customer relationship management vendor Siebel Systems Inc. last week added new sophistication to its hosted service.

San Mateo, Calif.-based Siebel said the new version is easier to use and offers more capabilities than Salesforce.com's service.

In addition, OnDemand Release 6 delivers out-of-the-box sales workflows, dashboards and customization tools.

The new release also includes prebuilt packages specifically geared to the financial services, automotive, medical and high-tech sales industries.

The applications have industry-specific interfaces and data models, said Bruce Cleveland, senior vice president and general manager of Siebel's OnDemand small and midsize business unit, in a webcast.

The moves fulfill promises made during last year's Siebel user conference [QuickLink 49956], where the company unveiled a strategy called Chapter 2, which emphasizes successful CRM processes instead of just implementing the technology. The strategy also added a vertical market focus.

To that end, for example, OnDemand Release 6 embeds a software object in the financial services package to help portfolio advisers create profiles on specific clients to help better manage leads and boost sales.

Other enhancements include analytical tools, such as prebuilt dashboards and reports that can measure the velocity of leads flowing through a sales pipeline.

The new version also includes a tool to help salespeople follow predetermined best practices to ensure that they do things such as capture accurate sales prospect data in the CRM system. In addition, there are advanced territory-management capabilities and support for the Chinese, Korean and Portuguese languages.

A Complete BI Tool

The embedded analytical features will make OnDemand a complete business intelligence tool, predicted Nigel Watson, CRM program manager at Cendant Corp.'s travel distribution services branch.

The New York-based travel and real estate services provider already uses Siebel OnDemand to enable sales personnel in different parts of the company to share relevant customer data.

In addition, OnDemand 6 could help managers with multinational accounts get a global view of customer activities across geographic regions, which could help managers make better decisions on issues such as territory distribution and customer assignments, Watsoo said.

"The new release of Siebel OnDemand is an attempt to position Salesforce as 'Siebel lite,'" independent analyst J. Bruce Daley, who writes the "Siebel Observer" newsletter, said in a statement.

By focusing on vertical markets such as financial services where the company leads rivals, Siebel hopes to encourage existing Salesforce.com customers to switch to OnDemand Release 6.

"This should lay to rest any doubts about Siebel's commitment to compete head-to-head with Salesforce.com," Daley said.

Siebel CRM OnDemand Release 6 is available now and starts at $70 per user per month. **51913**

MORE ONLINE

For more information on this topic, visit our CRM Knowledge Center

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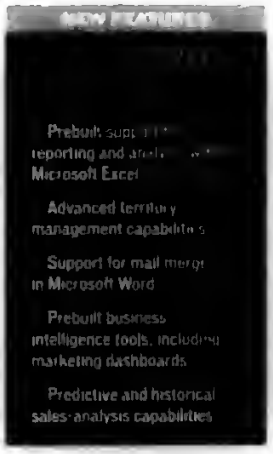
NEW FEATURES
Prebuilt support for reporting and analysis in Microsoft Excel
Advanced territory management capabilities
Support for mail merge in Microsoft Word
Prebuilt business intelligence tools, including marketing dashboards
Predictive and historical sales-analysis capabilities

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BRIEFS

BMC Buys Identity Management Firm

BMC Software Inc. agreed to acquire Calendra, a Paris-based maker of Web-based identity management technology. Neither BMC nor privately held Calendra disclosed financial details. BMC plans to add Calendra's workflow and user directory management features to its Business Service Management line.

IBM Opens 500 Software Patents

IBM outlined plans to provide open-source developers with access to 500 of its software patents. The patents will be available to individuals and companies using software that meets the Open Source Initiative's definitions of open-source technology. IBM said it expects the move to spur further innovation.

VeriSign Spends $270M on LightSurf

VeriSign Inc. agreed to acquire LightSurf Technologies Inc., a maker of wireless multimedia messaging technologies, for $270 million in VeriSign stock. LightSurf was co-founded by Borland Software and Starfish Software founder Philippe Kahn. VeriSign said the LightSurf technology lets it offer carriers a wireless data utility that can provide picture messaging, multimedia messaging services, and intercarrier messaging and interoperability.

Intel to Launch Mobile Technology

Intel Corp. on Wednesday will launch the second generation of its Centrino mobile computing technology in San Francisco, the company confirmed. The package, code-named Sonoma, will include a new version of Intel's Pentium M mobile processor, a wireless chip and a chip set that Intel said will double the graphics performance of current products.

ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL

MATTHEW FAULKNER

Intel to Prioritize Motherboard . . .

. . . management with the advent of its Active Management Technology. AMT is specialized flash RAM that Intel Corp. is adding to a line of PC motherboards it plans to ship later this year. The semiconductor behemoth says the new memory will support system management functions that can occur before the operating system boots the computer. A few companies, such as Intel spin-off LANDesk Software Inc., will get dedicated real estate on the flash chips.

According to Dave Taylor, LANDesk's vice president of marketing, the South Jordan, Utah-based company will likely use agent technology running underneath the operating system to assess security. For example, the agent could conduct an inventory of installed software to ensure that no viruses have sneaked on board, so to speak. If problems are detected, LANDesk could isolate the infected machine on a virtual LAN so it couldn't cripple other systems before it was fixed. The agent will work with the LANDesk Management Suite, which can already block applications outlawed by companies and conduct network-wide security threat analyses, among other functions.

Forget PC management and . . .

. . . let your service provider worry about it. Sure, you can watch over thousands of PCs on your network. But Gary Griffiths, CEO of Everdream Corp., asks, "Why would you want to?" Indeed, that's a reasonable question when you can hand the job over to his Fremont, Calif.-based managed services company for as little as three bucks per desktop each month. And given that Everdream Control Center 6.0 becomes available tomorrow with new features such as network scanning across multiple subnets, Web-based remote control of Windows PCs and an end-user portal for workers to check on the status of service requests, it may be an even harder question to answer.

Distributed operations challenge IT . . .

. . . to guarantee application delivery to remote sites. That's the contention of Nat Kausik, CEO of FineGround Networks Inc. in Campbell, Calif. He claims that most global companies house only a small portion of their employees at headquarters, while the vast majority work at numerous sites around the world. With the vagaries of all the different systems and networks that stand between the corporate applications running at HQ and end users scattered hither and yon, IT's service-level agreemeots with business units are always in jeopardy, Kausik says. Hence FineGround's planned shipment later this month of a new dashboard module as part of its Enterprise Application Delivery Suite, a set of application monitoring and management software that runs on a dedicated Linux appliance. The module can measure response times between screen refreshes on inventory look-ups and other transactions, assessing whether they execute within the parameters of SLAs. IT's goal, say? Kausik, should be to monitor business processes — not software. Pricing starts at about $15,000.

Software service tracks versions of . . .

. . . Microsoft Office documents and can deliver real-time updates when any changes have been made to the files. Later this quarter, NextPage Inc. in Draper, Utah, will make its NextPage 1.5 service available. The new offering will track files on shared and local drives, as well as through e-mail. An Outlook plug-in lets you know when a changed document has hit your e-mail client. According to Cydni Tetro, NextPage's vice president of marketing, full-scale document management systems are often rendered helpless when users fail to work within them. "As soon as one person goes around a document management system, it falls apart," she says. NextPage solves this with client software that wraps every Office file in metadata that can't be bypassed by users, Tetro says. She adds that future versions of the NextPage service will include tracking of PDF files and Notes documents. Pricing hasn't yet been determined.

Antispam market is booming . . .

. . . for FrontBridge Technologies Inc. in Marina Del Rey, Calif. So claims CEO Steve Jillings, who projects that this year, FrontBridge "will sign up more than one new customer for every business hour every week." Jillings is mulling whether to take the company public late in the year. However, he does predict consolidation for the other 200 or so antispam suppliers. That's because users "want more and more services from fewer and fewer vendors," he says. **ID 51902**

FINEGROUND's application monitoring appliance

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Introducing the Intel® Xeon™ processor with support for 32- and 64-bit applications. It means the most widely used server platform in the world can now work even harder. And new platform technologies enable increased power savings, flexibility and performance. For more information—and more choice—**visit intel.com/business.**

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BRIEFS

Microsoft, SAP Unveil .Net Tool Kit

Microsoft Corp. and SAP AG last week brought out the Portal Development Kit for .Net, an add-on for Microsoft's Visual Studio .Net 2003 tool. With the PDK for .Net, SAP users can build content for the SAP Enterprise Portal, using any supported languages, such as C# and Visual Basic .Net.

Openwave Acquires Cilys for $10M

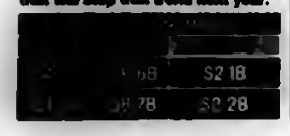
Openwave Systems Inc. in Redwood City, Calif., last week acquired privately held Cilys, a Canadian maker of wireless telecommunications software, for $10 million in cash and stock. Openwave plans to integrate Cilys' mobile technology into its client and server product offerings.

Nortel Restates Some Results

Responding to investigations of its bookkeeping, Nortel Networks Corp. last week restated financial results for 2001, 2002 and the first nine months of 2003 with the U.S. Securities and Exchange Commission. The restated results show an additional $1.93 billion in revenue for 2001 and 2002 but lower revenue than previously reported for the first three quarters of 2003. Nortel is expected to post results for the first half of 2004 by the end of this month.

Intel Beats Wall Street Expectations

Beating analysts' expectations, Intel Corp. last week reported a solid fourth quarter and said demand for its products was strong among both consumers and businesses. Projecting continued growth, President Paul Otellini said, "I see nothing on the horizon that will stop that trend next year."



McData Unveils 256-Port, Multiprotocol Switch

il0K consolidates multiple SANs onto one switch

BY LUCAS MEARIAN

McDATA CORP. today will unveil a director-class switch that offers 256 ports, multiple network protocols and hard-partitioning capabilities. Analysts said the switch will allow consolidation of a storage network infrastructure and intelligent routing services.

McData's Intrepid il0K switch features the DS10000 switch technology that the Broomfield, Colo.-based company gained in its 2003 acquisition of Sanera Systems Inc. The high-end il0K switch can be partitioned into numerous smaller, discrete storage-area networks (SAN) as well as 64 10Gbit/sec. interswitch link ports used to cobble together other switches already operating within an infrastructure.

The 10Gbit/sec. links can also be used to replicate data between data centers for disaster recovery purposes, said Patrick Harr, vice president of director platforms at McData.

Jay Astell, lead network architect at Kforce Inc., a Tampa, Fla.-based staffing firm with more than 70 branch offices across the country, is a user of smaller McData switches. He said his company is moving toward consolidating its storage switch architecture around a high-end offering. "It's a lot easier to manage a couple of larger devices than a bunch of smaller ones," Astell said. Kforce hasn't yet decided on a high-end switch.

The Intrepid il0K offers network intelligence on 256 ports.

McData is looking to promote tiered networks through use of the il0K as a backbone switch. For example, companies could use existing McData Intrepid 6000 series directors, which have 64 ports, and low-end 24-port Sphereon switches, all connected into and managed by a single il0K.

The il0K also supports multiple protocols, including iSCSI, Fibre Channel and Ficon connectivity. It offers Layer 2 network switching, or the ability to crack open data packets, read the information inside and route the data.

Storage analyst Arun Taneja said what's most impressive about the il0K is its ability to "carve out domains that are rock-solid in terms of their separation. The whole idea is that to truly separate them out for different departments or even companies, security has to be rock-solid," said Taneja, founder of Taneja Group Inc. in Hopkinton, Mass.

NEW FEATURES

McData's il0K Switch Offers:

- Network consolidation
- Dynamic network partitioning
- 10Gbit interswitch links
- Carrier-class functionality

Service Modules Coming

By the end of the year, McData plans to add service modules using an application-specific integrated circuit chip from San Jose-based Aarohi Communications Inc. That will enable network intelligence functions such as volume management, provisioning, data migration and replication. The modules will also allow the il0K or other McData switches to adopt functionality from other storage vendors and switch manufacturers.

For example, the il0K will be able to use EMC Corp.'s Storage Router when it ships later this year to gain virtualization capabilities.

"The nice part about the service modules is they're going to be compatible with any of their switches, which allows them to put intelligence data services into an existing network," said Nancy Hurley, an analyst at Enterprise Strategy Group Inc. in Milford, Mass.

Hurley said that the il0K is similar to Cisco Systems Inc.'s MDS 9500 series switches, "but it goes further. You'd be able to lower your overall cost because you're using this product to consolidate multiple SANs onto one switch and manage it all from one central [interface]," Hurley said. "They'll leapfrog Brocade and Cisco with this product."

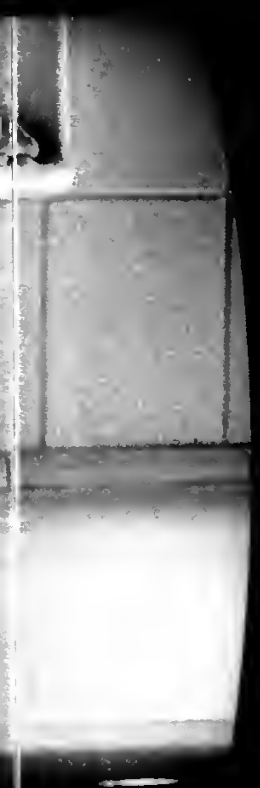
Harr said the il0K will ship in the next few weeks.

Its price tag will be about 20% higher than that of the Intrepid 6140, which costs roughly $1,747 per port, according to McData. ● 51951

Cisco to Resell EMC's Mid-Range Devices

[illegible]

Your data
is 7 pounds,
3 ounces.



Digital photography is more forgiving than film. It
shares a lot in common with film, but requires unique
and precise [illegible] cameras. [illegible]
hard [illegible] a lot more [illegible] cameras. [illegible]
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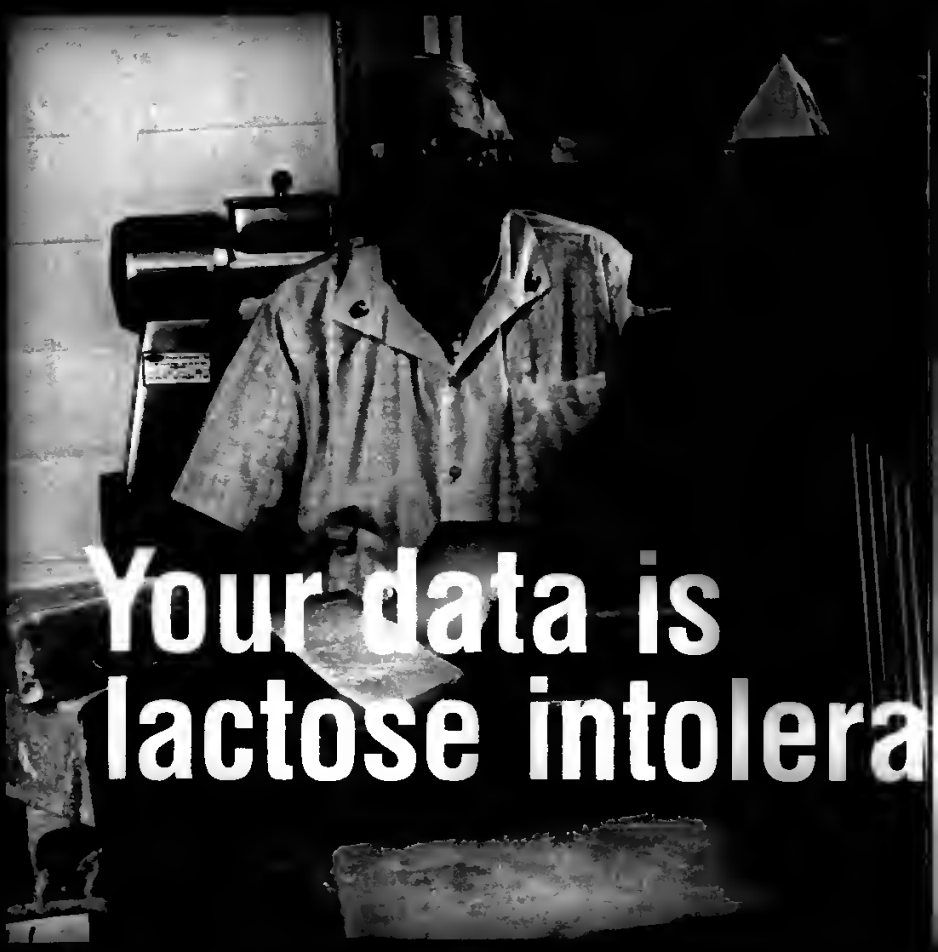
Your data is
lactose intolera

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the ruler of the
underworld.

Computer games are more than just
fodder for the imagination, even
confidence. That's why leading PC
designers use Hitachi storage technolo
their systems, and their gamers.

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well at night.

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We realize that data is more than 1's and 0's.

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Retailers Make Trial Offers On Shopping Technologies

Test new in-store devices tied to back-end systems

BY CAROL SLIWA

Tired of waiting in line at your supermarket's deli counter? At select Stop & Shop stores, you can place an order through a tablet-size PC that's mounted on a shopping cart and connected to a wireless network and be notified electronically when your order is ready.

Quincy, Mass.-based Stop & Shop Supermarket Co. is piloting the so-called intelligent shopping cart technology, which was developed by IBM and Cuesol Inc. The system is one of the emerging technologies that will be showcased this week as part of the X05 Smart Store display at the National Retail Federation's annual convention in New York.

But what looks cool to the outside world couldn't happen without the integration of numerous applications, including the supermarket chain's point-of-sale and loyalty-card systems, said Susan Shahroodi, a director of development with the information services group at Ahold USA Inc., which owns Stop & Shop.

Micro A6 is [illegible] that works with the retailer's [illegible] guide shoppers to wine they're [illegible]

When customers scan their loyalty cards, the cart-mounted PC — which Stop & Shop calls a Shopping Buddy — can display a wide range of information, including their buying histories, promotional items, personalized coupon offers and in-store maps.

In addition, the PC is equipped with laser scanners that can read bar codes as shoppers place items in the carts, eliminating the need to scan the goods at checkout.

The PC, which is equipped with an Opera browser, communicates via radio frequency with an IBM WebSphere server running a shopper assistant application that was written by Quincy-based Cuesol. Web services and more traditional integration technologies connect the various back-end systems, according to Shahroodi.

Planning Is Key

Stop & Shop has spent about a year on the project, she said. "It's not just 'Come in and plop down some racks and tablets and you're ready to go.' It's highly integrated, and you have to plan that."

The project was originally a joint development effort with Cuesol and Symbol Technologies Inc. After Symbol pulled out last year, Stop & Shop turned to IBM, Shahroodi said. The company rolled out the IBM hardware at three stores in Massachusetts this month, replacing Symbol models. Plans call for an expansion to 20 more stores in Massachusetts and Connecticut began [illegible]

[illegible] personalized coupon offers [illegible] in-store maps.

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[illegible] will be [illegible] in the Smart Store [illegible] SRI [illegible] in IBM [illegible] where [illegible] is [illegible] provided by Gemplus International. Metro Group is [illegible] its Future Store [illegible]

Metro's [illegible] purchase of wine at a kiosk assisted by an application that runs on a WebSphere application server. WebSphere then transmits data to the IBM Extreme Blade server, which is positioned above the customer and contains a video camera, projectors, mirrors and motion detection image software.

The device projects arrows on the floor to help the customer find the wine. It also can beam an image suggesting food that goes with the wine, sale items or a recipe. Like the Shopping Buddy, Metro's new technologies required integration with various applications, including its inventory management system, said Albrecht von Truchsess, a spokesman for the retailer.

The technologies are fascinating, but expensive for now. Because these are all fairly custom implementations, said Gartner Inc. analyst Jeff Roster, "It's a complete system — hardware, software, services — to get these things up and running." 51949

NEW PRODUCT

CA Revamps Software For Desktop Conversion

Unicenter Desktop DNA r11

Computer Associates International Inc.

■ **PRODUCT SUMMARY:** CA this week plans to announce the latest release of its software for managing desktop PC upgrades, with improvements to the technology acquired in its purchase of Miramar Systems Inc. last March. The new version is designed to capture incremental changes to a user's PC configuration for more-efficient restores and upgrades, CA officials said. In addition, IT managers can use Unicenter Desktop DNA r11 to keep user updates backed up for compliance with Sarbanes-Oxley Act requirements. Remote troubleshooting is also enabled.

■ **USER EXPERIENCE:** Harry Butler, support center manager at electronics supplier EFW Inc., a Fort Worth, Texas-based division of Elbit Systems Ltd., has been using the new software since mid-December to support 1,800 end users in seven locations. He said the product more than paid for itself when two technicians were able to convert 60 PCs from Windows 98 to Windows XP in less than eight hours while retaining the applications and settings that users had on the older operating system.

"No users were inconvenienced," Butler said. "When users came in on the second shift, the PCs had Windows XP, but all their shortcuts, printer settings, screensavers and more were on there." He added that without Desktop DNA, he would have had to pay "many more technicians overtime to do the work." Butler declined to comment on the software's cost, other than to say it was "a small part" of the $500,000 that EFW spent on CA products last year.

Incremental updates of user data done weekly with r11 are also helpful to EFW, Butler said. The previous version required capturing all of the content on a PC for a backup, which Butler described as a waste of time and bandwidth. Under the old approach, a single backup took 25 minutes, but that time has now been reduced to several minutes, he said.

EFW also uses Desktop DNA r11 to regularly scour PCs to make sure that all data is kept on a network drive, where it can be accessed to fulfill Sarbanes-Oxley compliance requirements. The new version allowed EFW to write a template to perform such work, Butler said.

Improved preservation of a user's desktop look and feel

Lets users write custom application-migration scripts in Java instead of a proprietary language

Includes an XML-based version of an editor tool for cataloging items that need to be migrated

■ **ANALYST ASSESSMENT:** IDC analyst Fred Broussard said that as companies convert their PCs to newer operating systems, including the planned Longhorn release of Windows, tools such as Desktop DNA should be "very helpful." The worldwide market for desktop upgrade management tools currently amounts to less than $100 million annually, Broussard said.

■ **OTHER VENDORS IN THIS MARKET:** BMC Software Inc. and Novell Inc.

■ **PRICE:** Starts at $22 per node for 100 end-user systems.

■ **AVAILABILITY:** Tomorrow. 51952

— Matt Hamblen

Retailers Make Trial Offers On Shopping Technologies

Test new in-store devices tied to back-end systems

BY CAROL SLIWA

Metro AG is testing an IBM device that works with the retailer's systems to guide shoppers to wine they've selected at an interactive kiosk

Planning Is Key

51949

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No users were left dissatisfied, Butler said. When users came in the second shift, the PCs had Windows XP but all their shortcuts, printer settings, screensavers and more were still there. He added that without Desktop DNA, he would have had to pay many more technicians overtime to do the work. Butler declined to compare the software's cost to the time it saved, saying it was a small part of the $500,000 that EFW pays for CA products each year.

Incremental updates, installed once weekly with Desktop DNA, help EFW, Butler said. The previous version required capturing all the contents of a PC in a backup, which Butler said was a waste of time and bandwidth.

EFW also uses Desktop DNA to regularly scan PCs to make sure data is kept on network drives where it can be accessed for Sarbanes-Oxley compliance requirements. The previous version allowed EFW to write a template to perform such work, Butler said.

Under the Hood

- Improved preservation of a user's desktop look and feel
- Lets users write custom application-migration scripts in Java, instead of a proprietary language
- Includes an XML-based version of an editor tool for cataloging items that need to be migrated

■ **ANALYST ASSESSMENT**

■ **OTHER VENDORS IN THIS MARKET**

■ **PRICE**

■ **AVAILABILITY**
51952

GLOBAL

An International IT News Digest

China Taps AMD, Lenovo For Wired Schools Project

TAIPEI

ADVANCED MICRO DEVICES Inc., Lenovo Group Ltd. and Dawning Information Industry Co. last week won a contract to supply 26,000 AMD-based computers for newly wired classrooms in the Chinese province of Hebei.

Hundreds of networked computer classrooms will be built under the Hebei Long-Distance Education Project, linking schools in rural and urban areas, Sunnyvale, Calif.-based AMD said in a statement. Financial terms of the deal weren't disclosed.

Every classroom will be equipped with a server based on AMD's Opteron processor and 30 desktop PCs that use the company's low-cost Sempron chips. At least 200,000 students will benefit from the project, according to AMD.

The servers will be provided by Dawning, which is based in Shenzhen, China, while the PCs will be supplied by Beijing-based Lenovo, which recently agreed to buy IBM's PC business [QuickLink 51396].

AMD has been working hard in recent months to build its relationships with Chinese computer makers and develop a stronger presence in China.

■ SUMNER LEMON, IDG NEWS SERVICE

GLOBAL FACT

Projected percentage drop in IT spending at German and Austrian enterprises this year

E-Commerce Crosses Borders in Europe

ABOUT 27% of European online shoppers have made purchases at Web sites outside their home countries, according to a recent survey of 22,907 European consumers by Forrester Research Inc. in Cambridge, Mass. The problem is that few European retailers actively target these online cross-border shoppers, despite the fact that they tend to be lavish spenders, said Forrester analyst Hellen K. Omwando.

"As barriers to cross-border fulfillment fall and international regulations and pricing policies converge, many European retailers should invest in engaging these valuable shoppers," Omwando wrote in a report released last month. Many of the cross-border shoppers hail from the U.K. or the Netherlands, and they tend to like U.S. Web sites such as Victoriassecret.com, the report said. About 30% of these Internet-savvy shoppers have bought something online in the past three months.

Software AG Acquires Israeli Integration Firm

SOFTWARE AG in Darmstadt, Germany, announced plans earlier this month to acquire Sabratec Ltd., a software company based in Or Yehuda, Israel, for about $7 million. Software AG said it's especially interested in the company's ApplinX technology for integrating legacy mainframe applications with other systems.

"Software AG, best-known for its Natural and Adabas offerings, has sought to grow revenue beyond these products' large but aging revenue streams," said Gartner Inc. analyst Dale Vecchio. Buying Sabratec, which has about 200 customers worldwide and a U.S. unit in New York, will help Software AG broaden its product line for modernizing legacy systems, said Vecchio. **51898**

Compiled by Mitch Betts

Briefly Noted

China's first network based on IPv6 began operating last month, according to the China Education and Research Network Information Center in Beijing. Called the China Education and Research Network 2, or Cernet2, the network links 25 universities in 20 cities at speeds up to 10Gbit/sec.

■ SUMNER LEMON
IDG NEWS SERVICE

Caixa Catalunya, Spain's third-largest savings bank, this month said that it had awarded Accenture Ltd. a 10-year IT outsourcing deal valued at more than $290 million. The agreement, an extension of an earlier contract, covers virtually all IT functions.

The government of Wales has announced plans for a life sciences institute at Swansea University that will feature a new IBM supercomputer that's the size of a tennis court. Nicknamed Blue C, it has an average speed of 1.7 trillion floating-point operations per second and a maximum speed of 2.7TFLOPS.

Feds Look to Fill IT Skills Gap at Agencies

With government outsourcing set to expand, project management a key focus

BY PATRICK THIBODEAU
WASHINGTON

At his inauguration on Thursday, President Bush is expected to outline his goals for the next term. But his IT staff is already at work on one of them: improving IT job skills within the government.

Karen Evans, U.S. administrator for e-government and information technology, said in a report issued last month that she wants to eliminate what she described as a "skills gap" at half of all federal agencies by the end of the fiscal year in September.

That covers a range of IT functions, including information security, application support, systems analysis and project management.

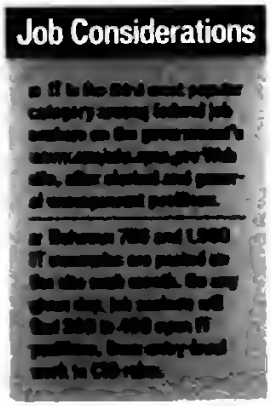
We want agencies to develop short- and long-term strategies to target investments in people to create a quality workplace designed to attract, acquire and retain quality talent," Evans said last week in a written response to questions about her plan.

At the U.S. Department of Homeland Security, CIO Steve Cooper recently created an IT Human Capital Center for Excellence that's intended to be a focal point for skills development. The department is now collecting data on its IT skills and will develop programs that stem from those findings, he said via e-mail.

Cooper added that his overarching goal is to build and maintain an efficient and effective IT workforce and make his agency "the employer of choice for IT professionals."

One key skills area for the government is project management. There are some 70,000 federal IT employees, and many of them work with contractors and outsourcing vendors.

Job Considerations



For instance, Input, a market research firm in Reston, Va., predicted last month that federal IT outsourcing will grow at a rate of 8.3% annually, from $11.7 billion last year to $17.4 billion in 2009.

Managers Needed

"What's driving this is the administration's emphasis on managerial skills to run complex programs and run them effectively," said Ray Bjorklund, an analyst at Federal Sources Inc. in McLean, Va. That includes both outsourced and in-house IT projects, Bjorklund added.

Evans said in her report that the government has made significant progress in the past year in increasing the project management skills of its IT staffers and that 75% of them are now qualified as project managers. She added that federal officials continue "to raise the capability and maturity" of IT project managers through training opportunities such as a planned executive exchange with the private sector. A pilot is due later this year.

Improved project management skills will be necessary to meet another goal outlined by Evans, who is the government's top IT official. Evans said she eventually wants all federal agencies to ensure that performance shortfalls and cost and schedule overruns average less than 10% on their IT projects. This year's goal is to have at least half of the agencies meet that standard. **51954**

WATCHING WASHINGTON

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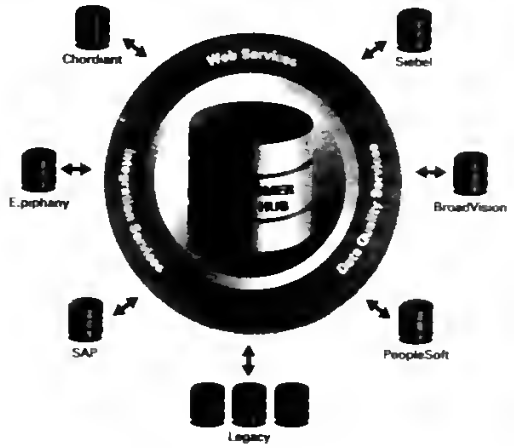

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Lawsuit Reveals an Open BlackBerry

Canadian bank submits intercepted PIN messages as evidence against ex-execs

BY JAIKUMAR VIJAYAN

PRIVATE MESSAGES exchanged using corporate BlackBerry wireless devices may not be quite so private after all. In fact, even the so-called PIN messages that many users thought were untraceable can be logged.

The lack of BlackBerry privacy became clear in a lawsuit filed in Toronto last week by Canadian Imperial Bank of Commerce (CIBC). The bank submitted scores of BlackBerry e-mails and PIN messages as evidence that several former executives took confidential information from the company and tried to recruit others while they were still employees of the bank.

The lawsuit was filed against Genuity Capital Markets, a Toronto-based investment management firm established by six former CIBC employees. David Kassie, Genuity's CEO, declined to comment about the suit.

The messages that were submitted as evidence included ones sent between BlackBerries using the devices' personal identification numbers (PIN) instead of e-mail addresses.

That form of BlackBerry communication has been considered by many users to be more private than sending messages between e-mail addresses, because PIN messages are sent directly from one device to another. Standard BlackBerry e-mail is routed via an enterprise server and can be logged and archived like other e-mail messages.

BlackBerry devices are manufactured by Toronto-based Research In Motion Ltd., which claims over 3 million subscribers at thousands of companies worldwide.

"PIN messaging is common in financial circles and work groups," said an executive at a Toronto-based technology vendor who asked not to be identified. "It's kind of like an SMS or instant message" that can't be monitored or logged by the BlackBerry Enterprise Server, the executive said. Thus, many people use the feature to exchange private or sensitive information.

Unexpected Gap

The fact that CIBC logged such messages is bound to surprise many people, said Thomas Smith, a director of the International BlackBerry User Group in Mountain View, Calif.

"I wasn't aware that PIN messages could be logged, but I'm not completely shocked either," said Smith, who administers more than 800 BlackBerry devices at his Houston-based employer, which he asked not to be named. Users of such devices "without question" believe that PIN messages can't be logged, he said.

But that's a mistake, said Rob Moffat, president of Wallace Wireless Inc., an Amherst, NY-based vendor of software for BlackBerry devices. "There is some misunderstanding about the ability to archive such messages," he said.

The reality is that such messages can indeed be logged, said Moffat, whose company sells software that, among other things, can be used to capture BlackBerry PIN communications. The function is increasingly being used by financial services firms and government agencies to log BlackBerry communication, he said. "There's Nasdaq, NASD and Sarbanes-Oxley stuff that these companies need to comply with," he said.

The news should come as no surprise to security professionals, said Pete Lindstrom, an analyst at Malvern, Pa.-based Spire Consulting LLC. "Most people think of peer to peer communications as a person to person thing," he said. "But somewhere in between, there's almost always a server." **51950**

Continued from page 1

Academia

[illegible] unauthorized access to student data.

But there is growing awareness of the potential cost and risk to reputation [illegible] with lax security, and [illegible] understanding of the [illegible] threat that universities networks can pose. [illegible] Peterson, policy analyst [illegible] Washington, last month told a group of [illegible] universities [illegible] working since July 2000 to foster a higher level of security awareness among academic institutions. The group has set up task forces that are creating guidelines designed to help universities locate and classify their IT assets, assess the risks those assets face and develop appropriate mitigation strategies, Peterson said.

Higher education institutions have come a long way [illegible]. It's not like we're sitting passively and waiting for things to happen."

One school that's taking action is UCLA, which is making a broad attempt to change attitudes about IT security after last June's theft of a laptop containing personal information about 145,000 blood donors, said Kent Wada, the school's director of IT policy.

Increasing Awareness

[illegible] UCLA's [illegible] campus and [illegible] users. [illegible] more than 600,000 [illegible] assets do not work and not [illegible] [illegible] [illegible]

Lawsuit Reveals an Open BlackBerry

Canadian bank submits intercepted PIN messages as evidence against ex-execs

BY JAIKUMAR VIJAYAN

PRIVATE MESSAGES exchanged using corporate BlackBerry wireless devices may not be quite so private after all. In fact, even the so-called PIN messages that many users thought were untraceable can be logged.

The lack of BlackBerry privacy became clear in a lawsuit filed in Toronto last week by Canadian Imperial Bank of Commerce (CIBC). The bank submitted scores of BlackBerry e-mails and PIN messages as evidence that several former executives took confidential information from the company and tried to recruit others while they were still employees of the bank.

The lawsuit was filed against Genuity Capital Markets, a Toronto-based investment management firm established by six former CIBC employees. David Kassie, Genuity's CEO, declined to comment about the suit.

The messages that were submitted as evidence included ones sent between BlackBerries using the devices' personal identification numbers (PIN) instead of e-mail addresses.

That form of BlackBerry communication has been considered by many users to be more private than sending messages between e-mail addresses, because PIN messages are sent directly from one device to another. Standard BlackBerry e-mail is routed via an enterprise server and can be logged and archived like other e-mail messages.

BlackBerry devices are manufactured by Toronto-based Research In Motion Ltd., which claims over 2 million subscribers at thousands of companies worldwide.

"PIN messaging is common in financial circles and work groups," said an executive at a Toronto-based technology vendor who asked not to be identified. "It's kind of like an SMS or instant message" that can't be monitored or logged by the BlackBerry Enterprise Server, the executive said. Thus, many people use the feature to exchange private or sensitive information.

Unexpected Gap

The fact that CIBC logged such messages is bound to surprise many people, said Thomas Smith, a director of the International BlackBerry User Group in Mountain View, Calif.

"I wasn't aware that PIN messages could be logged, but I'm not completely shocked either," said Smith, who administers more than 500 BlackBerry devices at his Houston-based employer, which he asked not to be named. Users of such devices "without question" believe that PIN messages can't be logged, he said.

But that's a mistake, said Rob Moffat, president of Wallace Wireless Inc., an Amherst, N.Y.-based vendor of software for BlackBerry devices. "There is some misunderstanding about the ability to archive such messages," he said.

The reality is that such messages can indeed be logged, said Moffat, whose company sells software that, among other things, can be used to capture BlackBerry PIN communications. The function is increasingly being used by financial services firms and government agencies to log BlackBerry communication, he said. "There's Nasdaq, NASD and Sarbanes-Oxley stuff that these companies need to comply with," he said.

The news should come as no surprise to security professionals, said Pete Lindstrom, an analyst at Malvern, Pa.-based Spire Consulting LLC. "Most people think of peer-to-peer communications as a person-to-person thing," he said. "But somewhere in between, there's almost always a server." 51950

Continued from page 1

Academia

university's vice president of IT, wrote in an e-mail message to all of the people who were affected by the incident. "However, it is possible that the data on the server could be used for identity theft."

The breach at George Mason is the latest in a list of incidents involving academic institutions, including separate ones that took place last year at the University of California's campuses in Berkeley and Los Angeles (see box).

In a survey of 501 colleges and universities conducted last fall by The Chronicle of Higher Education Inc. and Gartner Inc., 41% of the respondents said hackers had succeeded in penetrating their systems. Fifty-three percent reported denial-of-service attacks, and 14% reported unauthorized access to student data.

But there is a growing awareness of the potential cost and risk to reputation associated with lax security, and a better understanding of the broader threat that unsecured university networks can pose, said Rodney Petersen, a policy analyst at Educause, a Washington-based nonprofit association of 1,900 universities.

Educause has been working since July 2000 to foster a higher level of security awareness among academic institutions. The group has set up task forces that are creating guidelines designed to help universities locate and classify their IT assets, assess the risks those assets face and develop appropriate mitigation strategies, Petersen said.

"Higher-education institutions have come a long way," he said. "It's not like we're sitting passively and waiting for things to happen."

One school that's taking action is UCLA, which is making a broad attempt to change attitudes about IT security after last June's theft of a laptop containing personal information about 145,000 blood donors, said Kent Wada, the school's director of IT policy.

Increasing Awareness

For instance, UCLA has launched an awareness campaign to dissuade users from storing sensitive data on removable disk drives and Universal Serial Bus devices. It's also trying to encourage more encryption of stored data and is setting policies that prohibit users from downloading regulated data, such as health records, to personal systems that are connected to the school's network, Wada said.

But efforts to improve IT security face big challenges on many campuses, other higher-education IT managers said.

The need for academic institutions to provide relatively unfettered access to data, combined with the highly decentralized nature of university operations, contributes to the potential for security breaches, said Stan Gatewood, chief information security officer at the University of Georgia in Athens.

UGA has a 600-acre main campus and a presence in every county in Georgia. It has more than 60,000 registered users on its network and manages "well over 25,000 servers and miles and miles of fiber," Gatewood said. He added that protecting such a vast IT infrastructure can be daunting in a culture where easy access to information always trumps security concerns.

"We are battling change in an environment with a mindset that for years has been set in its ways," Gatewood said. 51953

Bad Marks on Security

OCTOBER 2004: The University of California, Berkeley, reports that unknown hackers had gained access to a database containing confidential information on 1.4 million residents and providers participating in a California Department of Social Services program.

JUNE 2004: UCLA discloses that a laptop containing personal information on 145,000 blood donors is missing.

MARCH 2003: A server containing credit card information on more than 57,000 patrons of the Georgia Institute of Technology's arts and theater program is breached.

2001: Hackers steal information on more than 55,000 students and staffers from a database at the University of Texas at Austin.

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DON TENNANT

C-F-Uh-oh

DO YOU GET THE FEELING there are a lot of CFOs around who are looking at the IT job market and saying, "Uh-oh"? They're probably thinking they just might have a teensy bit of a problem on their hands. And they're probably right.

I'm thinking about the salary survey we conducted in October [QuickLink a5080], in which we found that a lot of IT pros had just about had it with a third straight year of chintzy pay raises. Considering that many of them were dealing with increased workloads and the consequent demands not just on their professional lives but on what used to be their personal time as well, you have to wonder what effect all that had on their loyalty and whether they had visions of jumping ship the first time an opportunity arose.

What has to be causing many CFOs some angst now is that those opportunities indeed appear to be arising. A red flag probably went up earlier this month when Karen Evans, the federal government's de facto CIO, reported significant IT skills gaps in the federal government and set the goal of eliminating those gaps at half of all federal agencies by the end of the year [QuickLink 51852]. Analysts expect that the only way to do that will be for the government to farm more work out to the private sector, increasing demand for workers who may feel they've been undercompensated.

A couple of recent studies, moreover, indicate that the IT job market is heating up enough to give workers good reason to believe they need not feel stuck in a position they don't want to be in. Hudson Global Resources earlier this month released its findings from a December survey of 9,000 U.S. IT workers, 37% of whom said they expect their employers to do some hiring — up from 33% in November. That study came on the heels of one conducted by *CIO* magazine, a sister publication of *Computerworld*, in which 13.6% of 243 CIOs surveyed reported difficulties in finding the IT labor they need [QuickLink 51699]. That's the highest percentage to express that concern since the fourth quarter of 2001.

All those numbers translate into real-world opportunities, like Home Depot needing to fill 425 openings at its new Austin data center, as a Texas newspaper reported last month. And workers with computer-related skills are likely to be considering their options with technology vendors that are increasingly getting into hiring mode too. Microsoft said just last week that it plans to hire 3,000 employees in the Puget Sound region of Washington alone this fiscal year.

So while everything isn't all rainbows and roses yet — I'm sure I'll get my fair share of letters from unemployed IT workers who wonder what fairy kingdom I'm living in with all this job-market cheer — the fact is, things are looking up and expectations are changing.

I know mine are. One of my kids (actually, he's a naval officer, so I guess he really isn't a kid) entered the U.S. Naval Academy in 1999 to get a computer science degree. By the end of his second year, when the prospects for that particular field were appearing a little bleak, I'm sure I wasn't the only one thinking, "Uh-oh." Not anymore. He just completed his master's degree in computer science under a scholarship to Cambridge University in England, and no one is questioning his choice of career paths.

Including, I would suspect, the Navy's CFO. **51900**

Don Tennant

THORNTON A. MAY

It's Time to Fix Tech Marketing

"DO YOU HAVE any idea how much money my vendor wastes in its attempt to market to me?"

That's one of the most frequently heard laments among the IT leaders participating in the Annual Vendor Toxicity Survey now being conducted at the IT Leadership Academy at Florida Community College at Jacksonville. In fact, assemble any senior group of IT thinkers, and even though they'll probably fight over middleware strategy, Sarbanes-Oxley compliance campaigns, outsourcing initiatives and the future of Linux, they'll agree that the way vendors market products and services is dysfunctional, if not an actual roadblock to value creation.

Why is this? Are vendor marketing people stupid?

The Toxicity Survey has revealed several causal elements:

1. Inappropriate and outdated mental models on why and how technologies enter the organization. The days of "crossing the chasm" are over. Geoffrey Moore, the creator of this once-dominant descriptive framework, has moved on; vendors should too. The simplistic, product-centric characterization of customers as innovators, early adopters, early majority, late majority or laggards has given way to a much more fragmented and nuanced set of behavioral buying clusters. Just as society has fragmented into categories such as soccer moms, NASCAR dads and underemployed knowledge workers, so too have technology entry points atomized. Most vendor marketing programs haven't been successful at targeting the tribal leaders of these buying clusters.

2. Total disconnect from the political and organizational challenges facing the CIO. Vendors aren't inside the heads of IT leaders. Too many continue to prattle on about features and functions, but

COMPUTERWORLD

Executive Bulletin

IP Communications

Voice-over-IP is changing the way we think of, and manage, communications.

INTRODUCTION

All Roads Lead to IP 2

TRENDS & STRATEGIES

Wading Into IP Telephony 4

Getting ROI From VoIP 7

VoIP Monitoring Tools 10

VoIP Security 13

Call Centers and IP 15

Voice Over Wireless LANs 18

RESOURCES

QuickStudy: Session Initiation Protocol 21

Emerging Technology: IP Videoconferencing 23

All Roads Lead to IP

To consumers, IP telephony means making cheap long-distance phone calls over the Internet. But for corporate America, the convergence of voice, video and data on a single IP network is much more. It's a dramatic new way of thinking about, and managing, communications, with voice traffic acting like any other packet on the network and telephones acting as just another network client.

Converged IP networks allow for a wide variety of new applications to ride on the network and interact with it, including IP telephony, audioconferencing, videoconferencing, unified messaging and presence technologies like chat.

Getting Started

Corporate America is just starting down the road to voice over IP (VoIP) communications, though every analyst says it's just a matter of time before it becomes mainstream. By 2009, the installed base of IP [communications] equipment will dominate the enterprise landscape, but this still view is new, says Robert Rosenberg, president of Insight Research Corp. in Boonton, N.J.

There are several reasons why VoIP hasn't been an overnight success. Companies started testing the waters of VoIP in 2001, but there were serious concerns about voice sound quality that slowed the momentum. (Those concerns have been largely resolved.) Moreover, one of the key reasons for implementing VoIP was to reduce the long-distance charges associated with the traditional phone networks, yet those charges have dropped so low that those cost savings are less dramatic.

The cost of IP phones is another reason for the slow pace. "The cost of going VoIP is certainly a factor here, since the price of newer IP phones will continue to be about 25% higher than the [traditional] alternative," Rosenberg says.

VoIP never was and never will be the least expensive way to deliver voice to the enterprise, but the allure of VoIP's rich applications like video telephony will slowly convert legacy customers, he adds.

Indeed, there are a variety of reasons for moving to a converged IP network. Users report benefits such as the following:

- **Much lower costs for audioconferencing.**
- **The ease of moving, adding and changing phones.**
- **The fact that the IT staff can manage a single network infrastructure out of the data center, instead of two or more very different networks.**

Thumbs Up

Early users are giving it thumbs up for converged networks, saying their technology choices have saved money and made their voice communications setups more flexible. Some implement pure VoIP systems, while others rely on traditional PBX and [illegible] technologies. Either way, they're finding ways to [illegible] by starting to meld their voice and data networks.

IBM, for example, is rolling out a global VoIP network over the next five years that's expected to cut voice/data communications costs by 25% to 30%, according to Fred Spuleck, director of global voice infrastructure at IBM. One efficiency will come from lowering the number of IBM's private branch exchange (PBX) switches from the current count of about 900 to just 11 IP-based PBXs, Spuleck says.

Pure VoIP supporters say their systems are more resilient and can more easily support video or voice conferencing as well as new data applications. For example, IBM's new VoIP network will allow the creation of an audioconferencing system that will cut the company's annual costs for that capability in half, Spuleck says. A VoIP project at South Trust Bank in Birmingham, Ala., will save $1 million annually on conference calling alone and "several million dollars" overall, says Stanley Adams, the bank's group vice president of network services.

On the other hand, users of hybrid systems say they want to hold on to the value of large investments in time-division multiplexing (TDM) switches, and they suggest that a hybrid network would provide a backup if a major virus or other security incident affected their data networks.

GMAC Commercial Holding Corp. in Horsham, Pa., has adopted a hybrid approach that relies on older TDM switches but also provides IP telephony capabilities configured on top of a Multiprotocol Label Switching service to 106 locations globally, says CIO Niraj Patel. The annual costs should be 5% to 10% less than GMAC Commercial Holding's previous system, with last year's savings amounting to $120,000, he says.

But hybrid implementations are just a temporary phase in the evolu-

Components Of VoIP

- Codecs (compression/decompression algorithms)
- TCP/IP and VoIP protocols
- IP telephony servers and PBXs
- VoIP gateways and routers
- IP phones and softphones

SOURCE: *TAKING CHARGE OF YOUR VOIP PROJECT* BY JOHN O. WALKER AND JEFFREY T. HICKS (CISCO PRESS, 2004)

All Roads Lead to IP

TO CONSUMERS, IP telephony means making cheap long-distance phone calls over the Internet. But for corporate America, the convergence of voice, video and data on a single IP network is much more. It's a dramatic new way of thinking about, and managing, communications, with voice traffic acting like any other packet on the network and telephones acting as just another network client.

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People Issues

WHILE VoIP BECOMES MORE popular, some IT managers are wrestling with the process of merging their historically very separate voice and data communications staffs. "Every day I feel like firing somebody," says a frustrated IT manager who works at a trucking and transportation conglomerate. She says an ongoing effort to blend voice and data staffs has led to frequent battles among workers over their roles in the combined unit.

But it can be done. "It's working out for us," says David Siever, manager of communication technology services at PPL Services Corp., an energy utility in Allentown, Pa. PPL started planning for voice and data convergence about six years ago, so it had time to sort through problems and plan carefully, he says. Sixty employees who formerly were dedicated to either voice or data networks now work together to handle all types of communications needs in three integrated groups: infrastructure and planning, application design, and operations.

Donald Van Doren, president of Vanguard Communications Corp., a consulting firm in Morris Plains, N.J., says the complexity of combining voice and data staffs is a big concern. "The heritage of data and voice guys is just different," he says. "It's in the DNA."

Van Doren says that an organizational structure similar to PPL's is an effective way to start, with staffers assigned to support the network infrastructure, applications or devices such as phones and PCs.

tion of IP communications. Most new enterprise voice systems purchased over the next several years will be IP-based, according to ABI Research in Oyster Bay, N.Y. The research firm says that by 2006, 90% of all new IP phone systems shipped will be pure IP, not hybrids.

In most cases, corporate IT managers are opting to install VoIP in small pilot programs at branch offices or new locations. (Plus, PBXs generally have a seven- to 15-year life, so companies often wait until their PBX systems die before they move to VoIP.)

"The cost of IP [telephony] is justified only when you start something new, not as a replacement," says Geir Ramleth, CIO at engineering and construction group Bechtel Corp.

Remaining Challenges

VoIP technology is still more difficult to implement than the vendors would have you believe. IT managers' top concerns include the following:

- **Management tools.** VoIP requires special tools and skills because voice traffic is far more sensitive than data to common problems such as dropped or delayed packets.
- **Reliability.** When an employee picks up the phone — whether it's the CEO or a sales rep — he expects a dial tone.
- **Security.** Placing voice traffic on the IP network means that VoIP could be subject to the same sorts of security attacks that plague today's data networks.

This report provides advice — from your peers — about the costs and benefits of IP communications, as well as how to solve those management and security issues.

Voice-over-IP will dominate the enterprise in the next few years – are you ready? It's a dramatic change, but **Computerworld's new Executive Bulletin on IP Communications** will help you get there! Early adopters are already saving millions of dollars. Get this report to learn the new lingo and obtain advice from your peers on hot topics such as monitoring tools, security and ROI.

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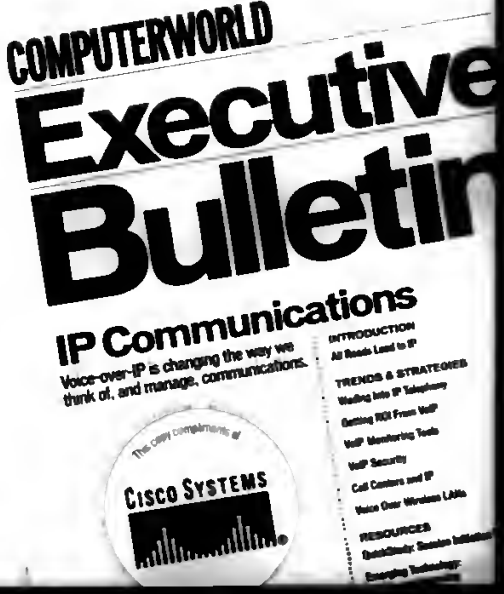
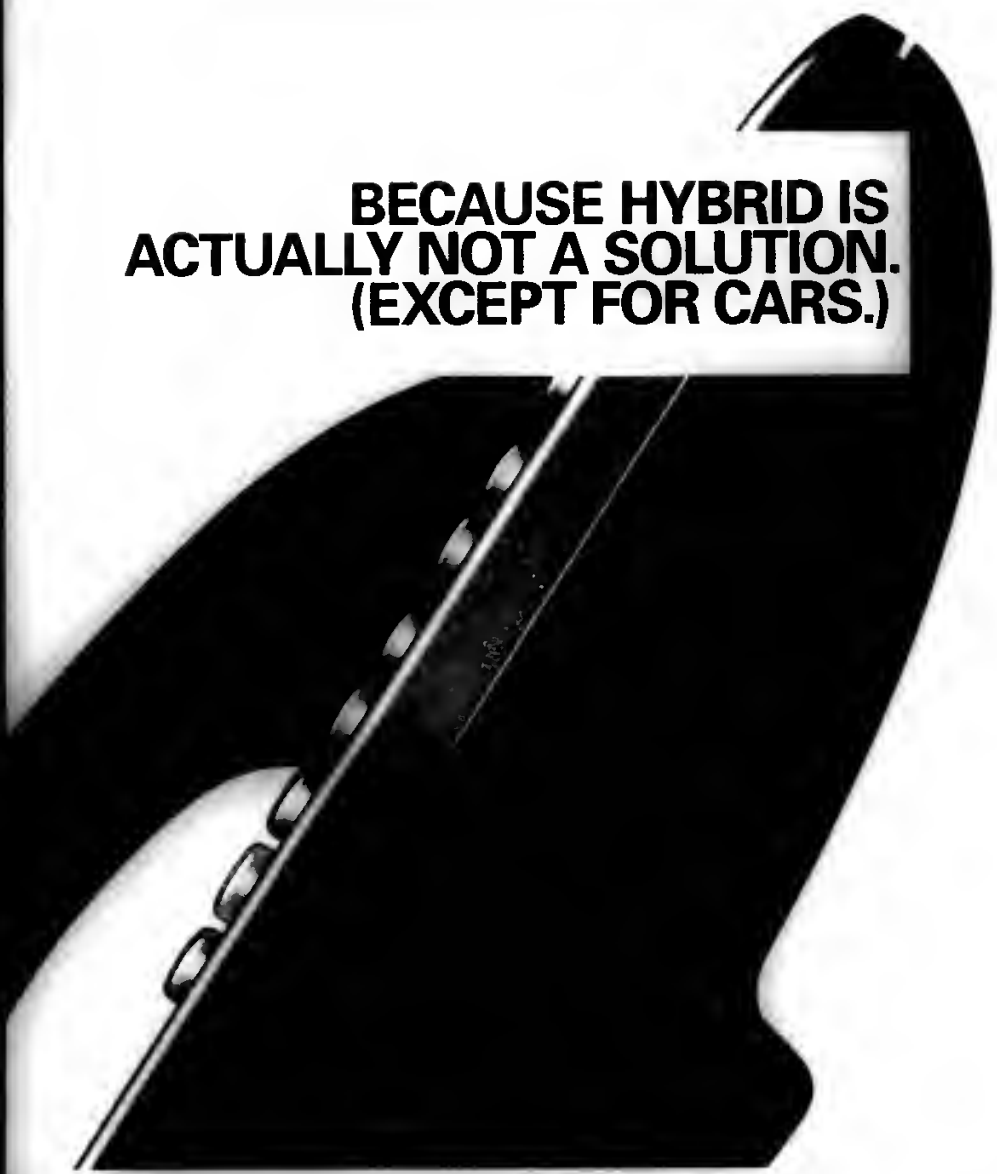


BECAUSE HYBRID IS ACTUALLY NOT A SOLUTION. (EXCEPT FOR CARS.)



Hybrid is as hybrid does. And when it comes to IP Communications, hybrid doesn't do much more than compromise. Hybrid doesn't do seamless failover. Doesn't do scalability. Doesn't do end-to-end security. Ditto for remote upgrades. So if it's a car, go hybrid. But if it's a networking and communications strategy you're driving, make sure you drive the integrated, secure, end-to-end solution: To learn more about Cisco IP Communications solutions or to find a service provider that offers these managed services over a Cisco Powered Network, visit cisco.com/domore. **COMMUNICATION. THE NEW FASHIONED WAY. CISCO IP COMMUNICATIONS.**

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today those are the last things on the minds of IT leaders. They're wrestling with risk management, real-world economics, internal politics, and the problems of generating momentum and delivering value via behavior change.

3. History-based skepticism of vendor claims. As one IT leader succinctly put it, "They lie to us!"

4. The total cost-to-value relationship of solutions. Another question that was frequently heard during the research was, "How many consultants does it take to make your software work?"

The litany of things being done wrong is too extensive to cover fully here. The bottom line is that vendors offering products and services that can truly help organizations aren't getting the attention they deserve.

One of the symptoms of the broken marketing model that's now in place is the sad fact that vendors are being denied access to the "gated communities" where problems are laid out, solution alternatives are examined and decisions are made. Two things have to happen. Vendors have to somehow get inside those gates. This will require a whole new kind of trust-based marketing — as opposed to T-shirt-based marketing. And marketers will have to create messages that focus on delivered value, not technical sophistry.

As a futurist, I predict that the next big thing isn't going to be what technology does; it's going to be how technology is marketed and sold. How you sell will have a big impact on whether you sell. Vendors are going to have to dismantle their Industrial Age product marketing assembly lines and learn some new tricks. **51825**

PIMM FOX

Battling The Inner Capitalist

REAL INNOVATION and technology advances don't happen as a result of stock options.

Stock options breed envy, dissatisfaction and disgruntlement in the workplace. Why? Because we're human.

Take a look at Google, the search-engine innovator that managed to prolong its private status in order to concentrate on great ideas and IT.

Google really was different. Its initial public offering highlighted the online auction process, and the company's constant innovation — e-mail, academic library searches and news alerts — has helped it battle and outflank Microsoft and Yahoo in the search-engine wars.

But Google is subject to the same human frailty we all face: envy.

A rarely invoked Securities and Exchange Commission law requires that many of the company's employee shareholders must disclose exactly how much Google stock they have sold.

The rule, No. 701 for those of you keeping track of SEC footnotes, offers certain tax advantages to employees who purchase shares prior to an IPO. The kind of stock they own is characterized as restricted and technically puts them in the same circle as executive officers and directors of the company. And while the stock sales haven't turned the spotlight on an army of Google millionaires, about 400 employees (out of 3,000) have so far been affected by the legal mandate.

Everyone expects the founders and the venture capitalists to make millions when a company goes public, and there's certainly a paparazzi-like quality to finding out who made how much. (Company parking lots in Silicon Valley have been wonderful barometers for the ups and downs of the stock market since the days of the tech bubble.)

But now the game of keeping score has filtered down to the Dilbert level. When co-workers know you have a couple of million tucked away, do they treat you any differently? If you are both doing the same job, do they treat the work any differently as well?

It wouldn't be fair to single out Google stock-owning employees for feelings that we all might harbor. And the capitalist lure of getting shares in a soon-to-be-public company is the upper-middle-class version of winning the lottery. You've got to be in it to win, as they say.

But as we head into a new round of high-tech IPOs, is it reasonable to assume that rational, thoughtful minds are able to conquer their greed this time around? To find and tame their inner capitalist?

Probably not.

The rewards are potentially too large, the hunger for profit too insatiable and the excuses dreamed up to explain why and how this or that company is different are only too believable.

No, if you want to look at the IT industry through rose-colored glasses, I would suggest Firefox and its siblings, Thunderbird and Sunbird — a browser, an e-mail client and a calendar application, respectively.

Developed through the efforts of The Mozilla Foundation, which is led by Mitchell Kapor, the founder of Lotus Development, these free and open-source tools are emerging as real competitors to Microsoft's Internet Explorer, Exchange and Outlook.

Open-source and free — these must be Bill Gates' least favorite words — are shaping up as an approach that could invigorate individuals and businesses to rethink the next big thing in desktop computing.

Wal-Mart, for one, seems to think this could be the beginning of something; it has said that it's selling a $500 laptop preloaded with Linux. The popularity of these IT alternatives should seed start-ups and fire the imaginations of people who just want to make great software.

And they'll be doing it without stock options. **51853**

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www.computerworld.com/columns

READERS' LETTERS

Hang Together, or Hang Separately

I ENJOYED PIMM FOX'S COLUMN "Workers of The IT World, Unite!" [QuickLink 50821] and agree with the premise but find it quite unlikely to happen. First, I find that many in my profession hold anti-union political views. To admit the need for the protection a union umbrella might provide would mean examining some of their other beliefs. Second, many companies classify their IT jobs as "management," even though the positions may have no management duties. Union talk among those so classified is usually grounds for dismissal.

Finally, IT folk (like workers in many other corporate departments) tend to be sheep. They're willing to stay and be treated as poorly as the corporation wants to treat them. I've been in situations where upper management had lied about major aspects of a project. As I stood and objected, I heard many voices behind me telling me to "give them hell." When nothing changed and I resigned, I assumed there would be a revolt, silly fool that I was. You could have heard the crickets chirping, there was so much silence. It's good to stand for your principles, but understand that most of the time, you stand alone.

Dan Scarborough
Hurst, Texas

Reflections on the IT Labor Market

WHAT NO ONE has addressed is the blatant supply-and-demand disconnect that underlies any talk of a shortage in the IT labor field ["Anything but IT," QuickLink 50655]. The shortage is of highly educated, highly trained people willing to work for the wages offered by industry. Instead of raising these wages to bridge the gap, the advocates of outsourcing go abroad to import labor. Meanwhile, American IT workers are leaving the field.

Those who complain about a shortage are like customers who walk into a software store, request a copy of Windows XP Professional for $10, whine about a shortage of the software when none is available at that price and then demand that the government import XP Pro from China so they can buy it for $10.

Scott Kirwin
Founder, IT Professionals Association of America Inc., Wilmington, Del.,
skirwin@itpaa.org

WHEN I FIRST started working in applications programming in the mid-'70s, I often wondered if a computer science degree would have been more valuable than my business degree. The answer has been emphatically no. Granted, I had a good grounding in computers as a part of my degree and find technical subjects easy to master.

However, the most difficult problems associated with successful systems development have always seemed to be business-related. So I'm not surprised that a fair number of people interested in IT would opt for something other than a computer science degree.

Jerry Powers
Phoenix

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 1 Speen Street, Framingham, Mass. 01701. Fax: (508) 879-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

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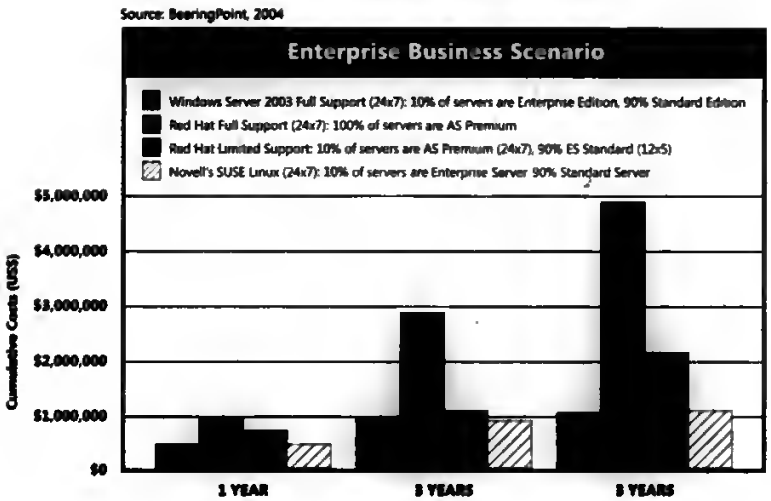
Microsoft

Source: BearingPoint, 2004


Enterprise Business Scenario
Windows Server 2003 Full Support (24x7): 10% of servers are Enterprise Edition, 90% Standard Edition
Red Hat Full Support (24x7): 100% of servers are AS Premium
Red Hat Limited Support: 10% of servers are AS Premium (24x7), 90% ES Standard (12x5)
Novell's SUSE Linux (24x7): 10% of servers are Enterprise Server 90% Standard Server
Cumulative Costs (US$)
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
1 YEAR
3 YEARS
5 YEARS

A recent study of licensing and support costs conducted by BearingPoint, a leading independent consulting firm, found that these acquisition costs for Windows Server™ 2003 are comparable to Red Hat Enterprise Linux or Novell's SUSE Linux Enterprise Server "despite the common perception that Linux is free or very inexpensive." However, if you require full 24x7 phone support on all servers, licensing and support for Windows Server 2003 can cost up to 73% less than Red Hat Enterprise Linux* over five years.

For the full study, visit **microsoft.com/getthefacts**

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***Red Hat Full Support (24x7) estimates based on case where 100% of servers are Enterprise Linux AS Premium. Red Hat Limited Support estimates are based on case where 10% of servers are Enterprise Linux AS Premium (24x7 phone support) and 90% are Enterprise Linux ES Standard subscriptions (9 a.m.–9 p.m. EST M–F phone support). Windows Server estimates are based on case where 10% of servers are Windows Server 2003 Enterprise Edition and 90% are Windows Server 2003 Standard Edition (24x7 phone support on all). This study was commissioned by Microsoft.** © 2005 Microsoft Corporation. All rights reserved. Microsoft, Windows, the Windows logo, Windows Server, and Windows Server System are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

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Notes From Security School

Do you want to look inside the world of hackers and learn some lessons about how to thwart their attacks on your network? The SANS Institute's professional training courses may be the best place to start. By Dan Verton

THE UNDERGROUND WORLD of the computer hacker may seem like a place where chaos rules, but the reality is there's a method to the hacker's perceived madness. And understanding that method is critical to knowing how best to respond to a skilled attacker.

Last fall, the SANS Institute offered three training courses that presented a step-by-step look at how criminal hackers operate and how organizations should respond.

While the bad news is that the hacker underground remains as cunning and capable as ever, the good news is that the security community continues to gain an understanding of how hackers operate.

I attended the SANS training and will pass along some of the crucial information provided. My notes from the sessions offer a look at how criminal hackers work. These lessons can give you the knowledge necessary to begin hardening your network against attacks.

Although no two hacker exploits are the same, most follow a series of predictable steps that are designed to increase the hacker's chances of success, says Ed Skoudis, founder and senior security consultant at Intelguardians LLC, a Washington-based information security consulting firm and the primary SANS instructor in hacker techniques, exploits and incident handling.

There are basic steps that "represent the flow of an attack," says Skoudis. They include conducting reconnaissance, scanning, exploiting systems and keeping access. And knowing what hackers do during each of these steps is critical to understanding how to defend your enterprise.

Recon

When a hacker conducts reconnaissance on a target, he is basically "casing the joint," says Skoudis. But it doesn't take much work because most organizations give away a lot more information than they realize. And that's why a hacker's recon operation almost always begins with publicly available information.

For example, corporate Web sites often give away contact names and

Continued on page 22

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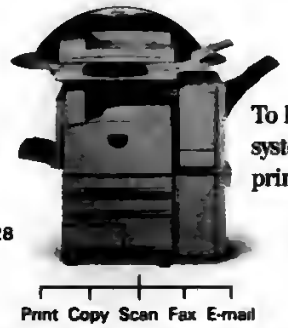

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phone numbers, information about software and hardware in use, and critical business data through U.S. Securities and Exchange Commission reports. All of this is prime fodder for social engineering, says Skoudis.

A Web-based recon of public information may also reveal disgruntled users or employees, as well as data about help desk requests. Likewise, it's possible to download a site's HTML code using a crawler, such as the one found on SamSpade.org. That would enable a hacker to search HTML and hidden fields and possibly uncover vulnerable scripts, Skoudis says.

The most common online method of reconnaissance, however, is conducting a "whois" search to gain domain registration data. Detailed searches can provide an attacker with the IP address of the organization's Domain Name System server. The attacker can then begin mapping the enterprise network in order to harvest additional IP addresses.

Attackers often use the "nslookup" command in Microsoft Windows or the "dig" command in Linux, both of which allow them to query name servers for information about various hosts and domains or to print a list of hosts in a domain.

Using these widely available tools and common techniques, a hacker can generate a series of IP addresses that are vulnerable to attack, says Skoudis.

The Scan Begins

The scanning phase of the attack is similar to what a military unit might do to probe an enemy's defenses to find an opening to attack.

There are a number of ways to do this, says Skoudis, and most skilled attackers try them all in an effort to capture as much data about the network as possible. Scanning methods include the use of network mapping tools, such as Nmap or Cheops-ng, to build a simple diagram of the network. The diagram would include a simple topology, the IP addresses of the systems, a list of open ports and active services, and information on the operating system.

Cheops-ng is one of the best automated network mapping applications available, says Skoudis. It "automatically discovers network hosts, traces the network and draws pretty pictures," he says. After that, it's simply a matter of gaining access.

Have a firewall, you say? No problem, says Skoudis. A clever attacker will use Firewalk or tcptraceroute, both of which can give him the information he needs to find a way through your defenses.

Firewalk Scanning Phase
A port scan is done with packets whose "time-to-live" is set beyond the last gateway before filtering. Based on response, we can determine filtering rules. If a "time-to-live exceeded" message comes back, the port is open, because the packet got through. If nothing comes back, the port is filtered.
Attacker
Packet filter firewall
TCP Port 1, TTL = 4
TCP Port 2, TTL = 4
TCP Port 3, TTL = 4
Time-to-live exceeded
TCP Port 3 is unfiltered!

"Firewalk is used to send packets through a packet-filter device, such as a firewall or a router, to determine which ports are open through it. An attacker will use this information to probe your DMZ," Skoudis says, referring to the demilitarized zone outside the firewall, where systems are often placed to intercept and broker access requests for all incoming traffic that's trying to get through the firewall.

And if the attacker finds an open port on your firewall, it's a simple step to then set up a script to check for telnetd, a server for the Telnet remote virtual terminal protocol, running on your DMZ systems. Because some companies enable telnetd from time to time for administrative purposes, an attacker can jump in at that moment and gain access, explains Skoudis.

Gaining Access

Gaining access is a matter of using the information gathered during the reconnaissance phase to determine the most appropriate exploits to employ.

Among the many things hackers look for on target networks are easily guessed or cracked passwords, weak trust relationships, known buffer-overflow vulnerabilities or common Windows vulnerabilities, Skoudis says. And here again, hackers have automated help available to them when trying to determine the best exploit for a given vulnerability. By using freely available tools, such as those on Nessus.org, hackers can remotely scan networks for common vulnerabilities across multiple operating systems. The results of these scans will tell them which exploits to use, Skoudis says.

In the Windows NT/2000/XP environment, one of the biggest vulnerabilities that hackers often try to exploit is what is known as a null session. A null session is simply an anonymous session to a Windows system through which information can be gathered about things such as network neighborhood browsing, Skoudis says.

If the attacker isn't skilled enough to pull sensitive data through the null session by hand, there are automated tools, such as Enum, which can gather user lists, machine lists, shared folders and drive lists, group and member lists, and password policy information. The tool is also capable of conducting brute-force dictionary attacks on individual passwords. All the attacker has to do is feed it a list of possible passwords to try, says Skoudis.

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Call list and cell phone
Plastic baggies for handling evidence
Extra notebooks for taking notes

"Once one machine is compromised, attackers can use it as a jumping-off point for other attacks, such as exploiting trust relationships through weak Unix [remote] commands," Skoudis says, referring to two common Unix commands. Remote log-in (r-login) and remote shell (rsh) should both be controlled closely.

Once hackers have gained access, they often want to hang onto it, according to Skoudis. That means planting a back door, usually an application-level Trojan horse, to enable an attacker to enter the network at will.

Keeping Access

Trojan horses and back doors are the two techniques most often used by hackers to maintain access to their hard-won prize, Skoudis says.

A back door, he explains, is a program that allows an attack to bypass normal security controls on a system, such as having to enter a username and password.

A Trojan horse, on the other hand, is a program that looks harmless but is really malicious. For example, a few years ago, a hacker made a program available that he claimed would convert read-only DVD drives into writable drives. "If you downloaded this phony DVD writer tool, it would actually delete your entire hard drive," says Skoudis.

"In the future, we may even face deeper Trojan horse back doors, implemented in the BIOS or microcode of our systems," Skoudis warns. "Most modern CPUs include updatable microcode . . . programs . . . that tell it how to run various machine-language instructions." And while CPU manufacturers often encrypt microcode updates, the security process is highly complex and undocumented, he says.

But currently, attackers often mask their back doors and cover their tracks by giving them the same names as critical operating system processes, such as winlogon.exe in Windows. Unfortunately, Windows isn't smart enough to know the difference between a vital system process and an imposter, says Skoudis. **51702**

Verton is a freelance writer in Burke, Va.

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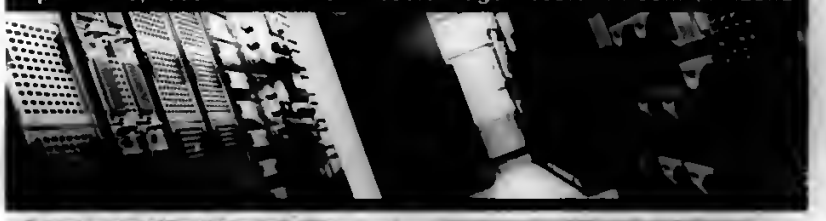

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9:30am – 11:30am	Primer and Tutorial Tracks
11:30am – 1:00pm	Luncheon
12:00pm – 5:00pm	Pre-Conference Golf Outing
1:00pm – 6:00pm	SNIA Technical Tutorials
1:00pm – 5:00pm	IDC Analyst Briefing
7:00pm – 9:00pm	Welcome Reception

WEDNESDAY, APRIL 13

7:00am – 8:00am	Breakfast
8:00am – 12:00pm	General Conference Sessions
12:00pm – 1:30pm	Luncheon
1:30pm – 5:30pm	General Conference Sessions
4:00pm – 5:30pm	Concurrent Sessions
5:30pm – 8:30pm	Expo with Dinner and Interoperability & Solutions Demo

THURSDAY, APRIL 14

7:00am – 8:00am	Breakfast
8:00am – 12:00pm	General Conference Sessions
12:00pm – 1:30pm	Expo with Luncheon
12:00pm – 7:15pm	Interoperability & Solutions Demo
1:30pm – 3:45pm	General Conference Sessions
3:45pm – 5:15pm	Concurrent Sessions
3:45pm – 7:15pm	Expo
7:30pm – 9:00pm	Gala Evening

FRIDAY, APRIL 15

7:30am – 8:30am	Breakfast
8:30am – 12:00pm	Concurrent Sessions
12:00pm	Conference Concludes

PAUL DYKSTERHOUSE
Director, Information Management & Infrastructure
NDC Health

HANK SIMON
Web Services Technology Strategist
Lockheed Martin

STEVE DUPLESSIE
Founder and Senior Analyst
Enterprise Storage Group

JON WILLIAM TOIGO
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- ❑ Data Processing Services
- ❑ Education
- ❑ Agriculture/Forestry/Fisheries
- ❑ Mining/Oil/Gas
- ❑ Travel/Hospitality/Recreation/Entertainment
- ❑ Publishing/Broadcast/Advertising/ Public Relations/Marketing
- ❑ Research/Development Lab
- ❑ Business Services/Consultant (non-computer related)
- ❑ Manufacturing of Computers, Communications, Peripheral Equipment or Software

Your Job Title/Function
IT MANAGEMENT
- ❑ CIO, CTO, CSO
- ❑ Executive VP, Senior VP
- ❑ Vice President
- ❑ Director
- ❑ Manager/Other IT Manager
- ❑ Supervisor

BUSINESS MANAGEMENT
- ❑ CEO, COO, Chairman, President
- ❑ CFO, Controller, Treasurer
- ❑ Executive VP, Senior VP, VP, General Manager
- ❑ Director, Manager
- ❑ Other Corporate/Business Manager

Number of employees in your entire organization (ALL locations)
- ❑ 20,000 or more
- ❑ 10,000 - 19,999
- ❑ 5,000 - 9,999
- ❑ 1,000 - 4,999
- ❑ 500 - 999
- ❑ 100 - 499
- ❑ 50 - 99
- ❑ Less than 50

What is your organization's annual IT/IS budget for all IT/IS products?
- ❑ $1 Billion or more
- ❑ $500 Million - $999 Million
- ❑ $100 Million - $499 Million
- ❑ $50 Million - $99.9 Million
- ❑ $10 Million - $49.9 Million
- ❑ $1 Million - $9.9 Million
- ❑ $500,000 - $992,999
- ❑ $250,000 - $499,999
- ❑ $100,000 - $249,999
- ❑ Less than $100,000

What is the estimated annual revenue of your entire organization?
- ❑ Over $10 Billion
- ❑ $1 Billion - $9.9 Billion
- ❑ $500 Million - $999 Million
- ❑ $100 Million - $499 Million
- ❑ Less than $100 Million

The one item that best describes your involvement in the IT purchase process
- ❑ Authorize/approve purchase
- ❑ Evaluate/recommend products, brands, vendors
- ❑ Specify features/technical requirements
- ❑ Set budget for expenditures
- ❑ Determine need to purchase
- ❑ Create IT strategy
- ❑ All of the above

Would you like to receive information about playing in the golf outing on Tuesday, April 12th?
- ❑ Yes
- ❑ No

Do you need hotel accommodations?
- ❑ Yes (please visit www.etcentral.com to reserve)
- ❑ No

Would you like to receive a complimentary subscription to Computerworld?
- ❑ Yes
- ❑ No

❑ **My company is Sponsoring/ Exhibiting at SNW**	❑ **$695** (through February 28, 2005) General Conference Package (April 13 & 14) (includes General Conference Sessions, Expo, Meals & Receptions) ❑ **$1,295** Total 4-Day Package (April 12, 13, 14, 15) (includes General Conference, plus Technical and Business Tracks, SNIA-produced Tutorials, SNIA-Certification "Test-Ready" Courses)	❑ **$1,295** (after February 28, 2005) General Conference Package (April 13 & 14) (includes General Conference Sessions, Expo, Meals & Receptions) ❑ **$1,695** Total 4-Day Package (April 12, 13, 14, 15) (includes General Conference, plus Technical and Business Tracks, SNIA-produced Tutorials, SNIA-Certification "Test-Ready" Courses)

As a sponsor, you may be eligible to attend using a registration provided with your sponsorship. (If those registrations have already been assigned/used, then you may register at the prevailing rates above.) See the current list of sponsors at www.snwusa.com. Questions? Call 1-800-883-9090 or email snwreg@computerworld.com.

❑ **I am a representative of a Non-Sponsoring IT Vendor Company**
❑ **$5,000 Business Development Professional Package** for Sales, Marketing and Business Development Professionals (includes General Conference Sessions, Expo, Meals & Receptions)

Vendors are encouraged to participate in Storage Networking World through sponsorship. (Details are available by calling Ann Harris at 508-820-8667.) Alternatively, vendors (as well as other "non-IT end-user" professionals as defined by Computerworld) may apply for registration at the "non-sponsoring vendor" rate of $5,000. Determination of what constitutes a "non-sponsoring vendor" registration is made exclusively by Computerworld. Please call 888-239-4506 with questions.

❑ **I am a Financial/Equity Analyst and/or Venture Capital Professional**

❑ **$1,295** (through February 28, 2005) General Conference Package (includes General Conference Sessions, Expo, Meals & Receptions)	❑ **$1,695** (after February 28, 2005) General Conference Package (includes General Conference Sessions, Expo, Meals & Receptions)

❑ **I am a qualified member of the press.** I can verify my press credentials.
Press should call Marenghi Public Relations at 1-781-915-5000 to register

Please fax this completed application to 1-508-820-8254

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Cancellation Policy (All of the following require **written notification** by March 21, 2005.)
In the event of cancellation, the registrant has three options:
1) He or she may substitute another attendee for the conference.
2) He or she may transfer this registration to the Storage Networking World Fall 2005 conference.
3) The registration fee will be refunded, less a $250 service charge (if written notice is received by March 21, 2005).
Please send cancellation requests via email to: snwreg@computerworld.com

BRIEFS

Seagate Offers 400GB Hard Drive

Seagate Technology LLC said last week that it's shipping external hard drives with capacities of up to 400GB. The drive features push-button backup, comes with software and an on/off switch for power savings and data security, and costs $399.

Add-on for Novell Linux From Userful

Userful, a provider of desktop Linux software, is shipping 1-Box for Linux, an add-on for Novell Linux Desktop 9. The software can effectively turn one PC into a network of up to 10 Linux workstations, according to the Calgary, Alberta-based company. With 1-Box for Linux, users can manage multiple workstations from a single box by adding extra video cards to PCs. The price is $99 per workstation.

Oracle Lite Gets Mobile Support

Oracle Corp. announced last week that it's adding support for mobile users to its Database Lite 10g. The vendor claims that the move will simplify the creation, deployment and management of applications accessed by mobile or embedded devices. The software is shipping now and costs $100 per named user.

Net Management App Upgraded

This week, AlterPoint Inc. will announce Device Authority Suite 3.5, network-change and configuration management software. The new version provides templates for Sarbanes-Oxley Act compliance, along with improved security and integration with CiscoWorks and other tools, said the Austin-based vendor. It also provides configuration syntax checking, a means of checking that network devices are properly configured before they're put to use. Pricing wasn't announced.

CURT A. MONASH

Learn From Vendors Before You Buy

IT SEEMS TO BE PREMATURE to pick an enterprise analytics supplier. While many vendors are working feverishly on technological integration and convergence, all of their product lines are severely flawed or incomplete. Indeed, none of them even has a credible near-term strategy for plugging all the gaps.

Even so, enterprise analytics — which is a catchall phrase describing analytic technology deployed across a whole enterprise — has to be part of your strategic technology planning. And going down the wrong vendor path wouldn't be so terrible anyway. Analytic product lines are designed to integrate well with many other types of software. Thanks to those integration hooks, migration from one analytic product line to another is at least endurable, if not easy.

So if you haven't started evaluating enterprise analytic technology vendors, you should begin forthwith. The obvious candidates are your current suppliers. Beyond that, talk with vendors that can actually teach you something about specific areas of the technology. Analyst firms and consultants are great, but they cost money. You might as well try to learn as much as possible for free.

Here are some of the best vendors to talk to about the following enterprise analytic technology areas.

Industrial-strength information delivery. The two leaders in high-volume analytic technology customer references are Business Objects (via Crystal Reports) and Actuate. Information Builders isn't too far behind. Meanwhile, Cognos has bet on a new product line that it asserts is leapfrogging the others. If you want a credible discussion about high-volume information-delivery architectures, those are the four vendors to talk with.

Analytic user interfaces. The best user interfaces to buy are the ones that please large numbers of users. If you want to talk about analytic user interfaces, therefore, the best vendor candidates are those that know about industrial-strength architecture. Oracle, long blessed with a strong usability lab, has creative ideas on analytic user interfaces.

Data integration. If you want to talk about sophisticated data-integration issues, you could hardly do better than specialist Ascential Software, which is even slightly ahead of quasi-specialist Informatica. But almost every serious analytics vendor has something useful to say on the subject.

Metadata integration. On the other hand, nobody has anything really useful to say about metadata integration, although they do offer a lot of marketing fluff. A product line's administrative and development tools either work well or they don't.

Relational database architectures. Oracle and IBM have put huge efforts into improving processing of complex analytic queries within traditional relational database management systems, and they'd be delighted to expound on the subject at great length. Vendors pushing interesting nontraditional alternatives or add-ons include Sybase (a column-based system), Netezza (a dedicated machine) and SAP (a future in-memory offering).

Multidimensional database architectures. Hyperion Solutions is the leading exponent of traditional multidimensional online analytical processing (MOLAP), while Oracle makes a great case for relational underpinnings and Applix has an interesting in-memory argument. Cognos makes a vigorous case for MOLAP's write speed in planning contexts, even if the original read-centric argument for MOLAP no longer holds water.

Analytic/transactional integration. If you want to hear about the integration of analytic and transaction-processing applications, you should talk to an enterprise application vendor. SAP had a better story than Oracle or PeopleSoft even before their recent merger. Now that Oracle's app marketing is in merger-driven legacy-reassurance mode, SAP is clearly the best tutor on the subject. Similarly, SAP has the best story on analytic business process design.

Alerting and mobile device support. Analytics vendors are increasingly oriented to helping you track key performance indicators and alerting you when a KPI exits its target range. But similar capabilities have been available in transactional apps for quite a while. Here, too, the best source of information is app vendors in general and SAP in particular.

Planning integrated with transactional apps or other analytic technologies. Looking at their product lines, it's clear that Cognos, Hyperion, SAP and Oracle are all headed toward integrating planning tightly into their analytic and/or transactional technology stacks. None, however, does a good job yet of explaining a credible near-term strategy in this regard. If you have to pick one area in which to invest your customer clout — such as insisting on talking with a senior product manager — this one is a good candidate.

Statistical analysis. Let's end with a simple one. The vendor with by far the most to say about business uses of statistics is SAS Institute. But SPSS Inc. is a worthy alternative in a number of specific areas, especially those pertaining to marketing applications and predictive analytics.

51058

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Nokia for Business

R.O. Ida, The Chief Financial Officer

Profiles in Business Mobility | Deploying Your Team

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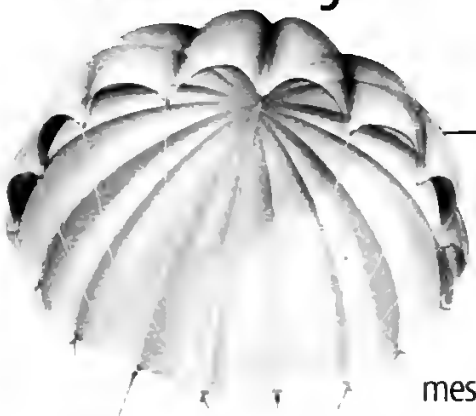

Business can happen anytime, anywhere. And with Nokia, you'll have the advanced messaging devices and secure mobile connectivity offerings you need to make sure your team arrives fully connected—and ready to work. So whether you're deploying a team for a big presentation, setting up a remote office, or visiting a customer, Nokia mobility solutions ensure that your team can hit the ground running.

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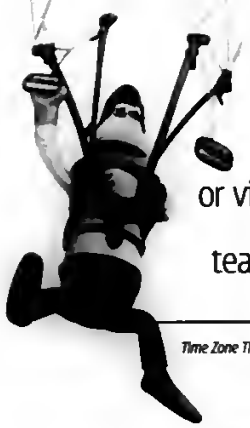

Time Zone Tim

Nokia One Business Server

Learn more about applying a mobility strategy to your business. Download the "Small Change, Big Impact" white paper at nokiaforbusiness.com

Metro Mel

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CIOs ON THE BOARD

Companies with CIOs on their boards of directors do better than those without. So why are there so few?

By Steve Ulfelder

A SEAT on a board of directors is one of corporate life's marks of distinction. In the tight-knit world of senior executives, boards function as both serious governing bodies and can-you-top-this status symbols, and either way, inclusion is a notable achievement.

With technology now widely viewed as a key — even, in some cases, the key — to business success, you might expect that boards would be aggressively courting CIOs. But that's not the case. Last year, public relations firm Burson-Marsteller checked with more than 3,000 businesses, including the Fortune Global 500, to see how many had installed CIOs on their boards of directors. The answer: a depressing 5% (see QuickLink 45626).

The study confirmed what Burson-Marsteller staffers suspected. "A few of us had noticed" the dearth of CIOs on boards, says Heidi Sinclair, global chairman of Burson-Marsteller's technology practice. "CIOs' profiles were raised up by Y2k, then they were torn down" when the Internet bubble burst in 2001, she adds.

Businesses that do have CIOs on their boards of directors tend to outperform their competitors, with profits averaging 6.4% above their industry averages, according to the study, which included senior IT executives such as vice presidents within the CIO category.

So, what value do CIOs bring to the board of directors? Why aren't more invited to join? And will their numbers grow in the near future?

WHY IT MATTERS

The corporate crime spree that came to light a few years ago with the Enron Corp. debacle brought fresh attention to corporate governance. As a result, while the activities of boards vary widely, their visibility today is high.

The composition of a board of directors hints at the CEO's priorities. For example, some boards are stacked with illustrious names in an effort to impress investors and analysts, while others are composed of members who are less famous. But those who are less well known may be more innovative and willing to question the status quo than their more famous counterparts.

The dearth of CIOs on boards of directors indicates that, lip service aside, few CEOs view technologists as likely to impress outsiders or contribute mightily on questions of strategy.

There are plenty of reasons for the absence of IT voices on corporate boards, and some are perfectly logical. Despite the recent evolution of the high-profile IT leader, nearly 60% of all CIOs report to the chief financial officer or chief operating officer, according to The Hackett Group Inc., a business advisory firm in Atlanta. This organizational structure guarantees that the entire IT function is perceived as part of operations.

"Traditionally, a CIO's focus was operational effectiveness, and most boards spend very little time discussing operations," says Jon Piot, CEO of Impact Innovations Group LP, an IT consulting firm in Dallas, and co-author of *The Executive's Guide to Information Technology* (Wiley, 2003).

Carl Dill, former CIO at AOL Time Warner Inc. and McDonald's Corp. and now a member of the board of directors at ThoughtWorks Inc., a Chicago-based systems integrator, puts it bluntly: "The typical CEO is looking for [board members] he can be learning from, and most CEOs are probably hesitant about what they can learn from a CIO." However, Dill says he hopes "that will change as CEOs begin to see how much the CIO is responsible for."

Other reasons for the scarcity of CIOs in the boardroom have to do with marketing and old-fashioned networking. Boards of directors are often as much about glitz as they are about governance. Big names are at a premium, and in the business world, it's exceedingly rare for anybody other than a CEO to possess a big name.

Moreover, like CIOs, chief executives have an informal network built through roundtables, industry confabs and the like. So it's understandable that when a CEO seeks to stock his board, the names that come to mind are folks he's served on panels or played golf with.

But when it comes to barriers that are within the control of technologists, the theme of communication arises most frequently. Whether fairly or not, technologists are still seen by many business people as too eager to discuss speeds and feeds, bits and bytes. "Most CIOs grow up in the IT department," says Piot. "They work on the network or infrastructure, then in project management. Nowhere in that chain are they exposed to the language of running a business."

In today's world, technology budgets are expected to mirror the priorities of the business and bring about competitive advantage. Not only are CIOs expected to make this happen, but they also need the ability to make their fellow executives understand that it's happening.

WHO'S IN

Senior IT managers say the CIOs and former CIOs who are most likely to serve on corporations' boards are those who have used IT to transform a business in a high-profile fashion. "The common theme is visionary use of technology to achieve business results and a demonstrated ability to communicate that vision to the CEO," says Bill Masters, CIO at National Medical Health Card Systems Inc., a pharmacy benefit management provider in Port Washington, N.Y.

As an example, Masters cites Dawn Lepore, who is now CEO of Drugstore.com Inc. in Bellevue, Wash. In her 20 years at The Charles Schwab Corp., including several in the CIO position, Lepore helped the brokerage firm become a leader in the online arena. Before taking the top job at Drugstore.com, she served on the boards of Wal-Mart Stores Inc. and eBay Inc.

Once a CIO does get on a board of directors, other invitations often follow. "CIOs who get on boards become enough of an influence on business leaders so that they surface on people's lists" when there's another slot to be filled, says Dill, who currently sits on two boards. The key, he adds, is to "be thought of as a business change leader, not just a back-office operator." Dill notes that the way in which he came to be on ThoughtWorks' board of directors exemplifies the informal networking that's common among CEOs. While he was at AOL Time Warner, Dill worked frequently with an executive search firm. Later, ThoughtWorks used the same firm to help identify potential board members, and it was natural that Dill's name arose.

PLENTY TO OFFER

CEOs who fail to offer a slot to a top technologist may be depriving their boards of directors of valuable cross-company knowledge. "CIOs have access to the broadest and deepest amounts of the information needed to manage a company," says Tom Lewis. Once the CIO for the Executive Office of the President during the Reagan administration and also CIO at USF&G Insurance Co., Lewis now sits on the board of ITM Software Corp., a vendor of business management systems in Mountain View, Calif.

"We add a lot of value because our responsibilities cover all areas of the business, not merely one function," says Dill. "IT is like a business within a business. A CIO needs to know marketing, finance, sales, operations and so on, so there's a broad business understanding."

Dill adds that in certain areas of concern to business today, CIOs are likely to be the senior executives with the most real-world experience. "IT is typically first to get into outsourcing, including offshoring," he says. "And other departments are now thinking more about that." The same goes for procuring professional services in general, an area that's old hat for many CIOs.

One common critique of boards of directors is that their makeup overemphasizes certain skills. The benefits of having a board member who launched or ran a business in impressive fashion are obvious, but many boards include several such members at the expense of the complementary knowledge a CIO could bring. "Business people know where they want to lead the company," says Lewis. "CIOs have much more ability to extract value from assets. Corporations that exploit both sets of skills find great value."

In the end, the lack of CIOs on corporate boards may be a symptom rather than the ailment. "The problem is broader than just not being on boards," says Lewis. "It's not being a peer in the major decisions of the company. It's important for CIOs to assert themselves and establish that peer relationship, and that's a philosophical change." **51548**

Ulfelder is a Computerworld contributing writer. Contact him at sulfelder@charter.net.

GIVE 'EM THE BUSINESS

Reasons for CIOs' slow rise to the board of directors fall into three categories: the nature of the old-boys' network, IT's roots as a service function and technologists' lack of fluency in the language of the boardroom. There's not much you can do about the first two, but if your ambition rises all the way to the board, you'd better address the third. Here are some ways to get started:

- [illegible]
- [illegible]
- [illegible]

[illegible] a nine-month professional development program aimed at preparing participants for senior management in today's business-driven IT culture.

- [illegible]

[illegible] example, ask lots of questions when gathering user requirements and learn the ins and outs of the business units.

- [illegible]

[illegible] and into a business unit.

Steve Ulfelder

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EVENTS

U.S.-Russia Tech Symposium

■ **Feb. 17-18, Stanford, Calif.**
Sponsors: Stanford University, Dow Jones & Co.
Topics at the second annual U.S.-Russia Technology Symposium include government policy toward entrepreneurship and innovation, opportunities for technology partnerships, global flows of capital and technology, changing business models, institutions and incubators, and overseas investing. **www.usrts.org/stanford**

Security

■ **Feb. 14-18, San Francisco**
Sponsor: RSA Security Inc.
The 14th Annual RSA Conference includes tracks on applied security, the business of security, cryptography, application development, government, hackers and threats, identity and access management, perimeter defense, privacy law and policy, professional development, secure Web services, standards, and wireless and embedded security. **http://2005.rsaconference.com/us/**

Knowledge Management

■ **Feb. 28-March 2, San Francisco**
Sponsor: Braintrust International
The seventh annual Braintrust International summit on knowledge management includes topics such as the power of KM as boomers take flight, KM's role in the global economy, leveraging the next-generation knowledge worker, achieving buy-in, using knowledge to facilitate innovation and blogs. **www.ilrusa.com/braintrust**

Supply Chain

■ **March 1-2, Dallas**
Sponsor: International Quality & Productivity Center
Supply Chain IT: Standardizing, Integrating and Securing Data will cover topics such as designing a foundation for IT and supply chain integration, standardizing databases to support supply chain systems, driving cost reductions and ROI, wireless solutions and securing the supply chain. **www.iqpc.com**

BART PERKINS

Funding Your Infrastructure

IT'S NOTORIOUSLY DIFFICULT to get funding for infrastructure. Quantifying the benefits of an infrastructure investment as a stand-alone project is nearly impossible, so very few companies fund infrastructure by itself. Even seeking money for infrastructure upgrades can be a frustrating experience. Many companies upgraded their infrastructure as part of their Y2k efforts and have avoided subsequent investments. As a result, infrastructure upgrades are long overdue in most corporations today. Justifying this fundamental investment is one of IT's key challenges.

Most companies force IT to bury the cost of infrastructure in IT projects. Unfortunately, this approach has inherent difficulties. Buried infrastructure costs can create these common pitfalls:

■ **Distorted business cases.** The first project to require new infrastructure typically pays most of the cost, while subsequent projects get an unfair free ride. This makes cost evaluations and comparisons among projects difficult and inaccurate.

■ **"You first" syndrome.** Because the first project pays most of the infrastructure cost, every department wants its project to be second in line at the funding trough, creating a counterproductive competition. One client was facing a major network investment. Knowing this, sales and finance dithered for a year, each inviting the other to start the next project (and therefore bear the cost). While they were focused on internal politics, a competitor stole significant market share.

■ **Piecemeal infrastructure.** Companies that fund infrastructure one piece at a time rarely have an overall design, resulting in an inconsistent implementation. This is similar to putting fiber-optic cable in your house's new addition without upgrading any existing parts of your home network. Moreover, although implementing infrastructure in stages may be sufficient for the first few applications, it may not scale or be cost-effective.

■ **Inaccurate accounting.** When infrastructure costs are spread across multiple projects and organizations, it becomes difficult to accurately assess the total cost of your infrastructure or to model future expenditures.

Infrastructure should be funded explicitly. Cisco's CEO, John Chambers, believes that a rich infrastructure will result in increased corporate productivity and is simply the cost of doing business. Cisco funds its infrastructure at the corporate level; business cases have to justify only direct project costs. Every company should adopt this best practice.

Unfortunately, few CIOs have the luxury of working with an executive team that gives infrastructure projects a high priority. If your company is reluctant to allocate sufficient funding, explain the detrimental effects of buried infrastructure costs. Be prepared to describe in business terms how a robust infrastructure will better serve corporate business objectives.

In addition, use these approaches to help justify infrastructure expenditures:

■ **Explain the infrastructure life cycle.** Most companies plan for the necessary expenses associated with physical-plant refurbishment. For example, when a hospitality company models the financial return from a hotel, it plans to replace all the beds and carpets at specified intervals. These expenses require little justification, since "wear and tear" is well understood and easily visible. Similarly, IT infrastructure components have a finite lifetime and need to be upgraded or replaced periodically, typically every three to four years.

■ **Tie infrastructure to business needs.** It's easier to justify infrastructure required by a business program that blunts a competitive threat or achieves a significant business objective. (Just keep the funding and accounting separate!)

■ **Level the burden** by spreading the costs across all applications that use the infrastructure. New applications should contribute proportionally as they are installed.

■ **Show low unit costs.** The easiest way to keep critics at bay is to demonstrate that your costs of infrastructure services are low. Compare your organization's costs against industry norms, and make sure you have trimmed any fat. Low unit costs can help deflect attacks if your overall costs rise as a result of higher volumes.

■ **Demonstrate infrastructure leverage.** Show how planning and implementing a robust, scalable infrastructure will better support current applications as well as those planned over the next few years.

■ **Set executive expectations.** When you request infrastructure funding, prepare your executive team for future expenditures. Explain the approximate cost and time frame of the next infrastructure refresh. Subsequent upgrades are inevitable, so prepare them with an "I'll be back" message.

Infrastructure is the foundation of corporate productivity and provides crucial support for your company's future business initiatives. For maximum effectiveness, infrastructure needs to be well designed, adequately funded and upgraded regularly. **51478**

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KNOWLEDGE CENTER NETWORKING

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Call Centers Put on Speed Dial
Mental health provider Magellan Health Services load-balances its geographically distributed staff with its VoIP deployment.
PAGE 38

Fashion Designer Gets Hip to IP
By piggybacking voice traffic onto a routed IP network, Liz Claiborne has reduced long-distance calling charges.
PAGE 36

OPINION
VoIP Is Scary
VoIP's security risks aren't worth mere cost savings, says columnist Mark Hall. But the right application might change that. **PAGE 37**

EDITOR'S NOTE

THIS ISN'T GOING TO BE CHEAP OR EASY. For large corporations, switching to a voice-over-IP (VoIP) system could require an investment of $20 million to $40 million or more, according to Chicago-based consulting firm DiamondCluster International Inc. And the most common mistake is underestimating the complexity of the project, DiamondCluster says.

For starters, you need to do an assessment of your current data network to see if it's robust enough to handle the bandwidth and service quality required for voice traffic. Hint: It probably isn't and will require upgrades. And that readiness assessment alone costs an average of $17,220, according to Nemertes Research LLC in New York.

Nevertheless, mainstream corporate IT executives are diving into VoIP. A recent survey of 131 companies by Deloitte & Touche USA LLP found that two-thirds of businesses will be deploying VoIP to the desktop by 2006. In many cases, they're moving out of pilot projects and into full-fledged deployments.

In this special report, we provide extensive case studies of five robust VoIP projects at major companies such as GlaxoSmithKline, Magellan Health Services and Liz Claiborne.

The interesting thing is that there's a disconnect between the stories these users tell and the stories the analysts think the users should be telling. The analysts say the strategic benefits of VoIP are in fancy "converged applications," but the users mostly want tactical improvements like toll bypass, extension mobility and a single voice/data network to manage. In this economic climate, IT managers — always a pragmatic bunch — are looking for cost savings first; then they can layer on those fancy applications in the future. **51000**

Mitch Betts is Computerworld's executive editor. Contact him at mitch_betts@computerworld.com.

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VoIP Goes Mainstream

Case studies of five companies that have taken the voice/data plunge.

VoIP: Ready for Prime Time

With most early problems ironed out, what's missing now are the killer apps. BY MATT HAMBLEN

FOUR YEARS AGO, a company investing in voice-over-IP technology was taking a huge, bleeding-edge risk. Poor voice quality and reliability were all-too-common complaints. But today, many of those technical problems have been ironed out, and VoIP is moving into the mainstream.

Companies are now using VoIP technology to combine voice and data networks and introduce powerful applications, such as the ability to dial a voice call by clicking on a co-worker's name in a company directory instead of looking up the number and dialing it. Indeed, VoIP has matured to the point where companies should be prepared to test the technology as an eventual replacement for traditional circuit-switched systems, which will eventually be phased out.

A full 97% of new phone systems installed in North America in 2007 will be VoIP or a hybrid of VoIP and circuit-switched systems, predicts Jeff Snyder, an analyst at Gartner Inc. in Stamford, Conn.

In fact, the market shows a clear decline in the number of traditional voice switches sold in North America and an increase in IP-enabled or pure IP systems. Revenue for pure IP systems sold in North America in 2005 are expected to hit $903 million, up 32% from $686 million in 2004, Gartner estimates show. Meanwhile, sales for traditional circuit-switched systems are expected to drop by 32% in 2005 to $999 million, down from $1.4 billion a year earlier. And hybrid systems are projected to grow by 30%, hitting $2 billion in 2005, up from $1.5 billion in 2004.

But for many, the technology's return on investment is still uncertain. To get payback from VoIP, IT managers must find the applications that will be critical, if not killer, for their organizations, and they must be prepared to look hard for reliable systems integrators.

Moving With the Times

Snyder says the main reason to consider VoIP isn't cost savings, as many vendors would have you believe, but long-term system protection, simply because traditional systems won't be available in coming years. Companies can save money by converging separate voice and data networks into a single IP network. Plus, calls made between remote sites are free, and moving or adding employees costs less.

But, Snyder warns, "the cost savings for most organizations is not compelling enough to change from an older system."

"Enterprise buyers are definitely more comfortable with the technology than they were four years ago — with good reason," says Brian Riggs, an analyst at Current Analysis Inc. in Sterling, Va. "The technology has matured quite a bit, and the product offerings are stabilized. But that being said, although a lot of enterprises recognize that IP is the direction they are eventually going to take, the majority may not feel the pressure to make the switch right now because their existing systems are working and the applications they have are good enough."

There is clearly no single killer app to drive adoption, experts say. Adding applications such as softphones or eliminating the need for a separate handset is "not going to rock your world," Snyder says. "We're still waiting for a sufficient number of these applications that added together will provide great efficiencies. Today, it's still hard to find enough of these measurable efficiencies to justify the expense of IP telephony."

Integration Issues

The obstacles of the technology's early days have been largely overcome. Several VoIP vendors now sell software that can create quality-of-service (QoS) capabilities so networks can be tuned to give preference to voice calls over data calls. But that can be a tricky process. The value of VoIP is that it combines data and voice so that a companywide phone directory can be easily located, for example. But if the data network is secondary to voice, it might be hard to find such needed data on a voice or video call, Snyder says.

Voice quality can also be refined to become nearly identical to the quality of a call from a circuit-switched network, but that requires a robust IP network that will add to total costs.

One of the biggest challenges for companies considering VoIP today isn't the technology or finding vendors to provide the needed hardware and software. Instead, it's finding a credible integrator, says Snyder. "The integrators are the ones who deploy VoIP security, design reliability and redundancy and set up management for QoS. These are the big hot buttons, and it is possible to provide such things," he says. "But there are shortages of these [integrators]."

In the past, some failures of VoIP could be traced to integrators and IT personnel trained in data networks but unfamiliar with voice networks, Snyder says. In fact, Cisco Systems Inc., a top VoIP system provider, has grown more rigorous in choosing its integrators in order to provide more-qualified workers.

Riggs says the biggest challenge remains finding the killer apps that will force many more companies to upgrade to VoIP.

Still, VoIP is a "hugely hot topic" with IT managers, as some of the reins on spending are eased, Snyder adds. "People ask me, 'Do I need to change to VoIP?' and I say, 'You need to be aware of it and informed about it so you can decide when the time is right, but don't feel forced to do it.' " 51407

VOIP VS. CIRCUIT

U.S. Phone Extensions Installed

According to projections from The Insight Research Corp. in Boonton, N.J., the number of VoIP extensions installed won't catch up to circuit-switched extensions until 2007.

	2004	2005	2006	2007	2008
Premises VoIP	13.6M	19.4M	26.6M	35.3M	45.2M
Legacy PBX	47.0M	42.7M	38.6M	34.7M	30.8M
TOTAL	60.6M	62.1M	65.2M	70.0M	76.0M

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Newspaper Centralizes Call Routing

Gains centralized management and toll efficiencies. BY JOANIE WEXLER

THE SEATTLE TIMES CO. learned in 2001 that its private branch exchange vendor, Avaya Inc., would soon discontinue support for its aging Definity G2 circuit-switched phone system. So the century-old daily newspaper embarked on a search for a future-proof PBX replacement.

"We're a 24-by-7 shop with a newsroom full of deadline-oriented reporters," says Thomas Dunkerley, IT communications manager. "We have the same expectations for quality of service and uptime that hospitals have."

After also evaluating phone systems from Cisco Systems Inc. and Nortel Networks Ltd., the company settled on an Avaya Communication Manager IP PBX. Nortel seemed to require a forklift change in administration, Dunkerley says, and CPU fault-tolerance in Cisco's CallManager IP PBX required manual intervention.

"For one CPU to fail over to the other, you had to go in and make routing changes," he explains.

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Today, remote Seattle Times news bureaus, warehouses and distribution sites run Avaya 4620 IP handsets but not Avaya PBX software. Instead, the distributed handsets feed off a centrally managed system via private routed WAN connections. Remote users dial over the private network to the headquarters IP PBX to make any kind of call.

"What used to cost us $50,000 in dial charges now costs us $2,000 for a router at each site," Dunkerley says.

The catch, though, is that should a T1 fail, all land-line calling capabilities at that site would cease. So there is an emergency analog line at most sites. "And there are cell phones around to use in case of emergency," Dunkerley says.

COAT-HANGER CABLING PLANT

The Times headquarters consists of four connected buildings constructed over the past 100 years or so. When the company purchased the Avaya Communication Manager in 2001, it had a mix of old, very old and very, very old cabling.

Dunkerley notes that VoIP requires a high-end, Category 5E cabling plant. "But shortly after we bought the system, Sept. 11 hit. Then there was the dot-com bust, and our budget vaporized," he says. "We were stuck with an IP phone system needing a good cabling infrastructure and no money to get one."

The situation slowed deployment. But the Times conducted extensive in-house testing and discovered that "VoIP can run over coat-hanger wire," Dunkerley says, including existing Category 3 wiring and links running far

beyond Ethernet's official 100-meter limit. "The stuff ran fine," he says. "It was much better than a cell phone connection, even in the worst case."

The company moved groups over to the new system a little at a time for six months, then struck a deal with Avaya's cabling service to get the higher-end cabling out to the endpoints. "Our quality never really changed, except for the occasional pops and clicks," with the improved cabling, says Dunkerley.

DISASTER GONE GOOD

Dunkerley enjoys telling an anecdote that demonstrates how well the shift from circuit-switched to IP telephony worked. During a routine weekend move of a news bureau, workers dropped and destroyed a Definity G2 that was to remain in service for another several months.

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But his phone stayed silent. Eventually, he called the bureau. He learned that users realized that their phones had been replaced, but because the handsets were intuitive to use, they hadn't required any help.

Like many organizations, the Times anticipated that IP would simplify moving users. "Our organization moves 25% of its people every year. With 1,000 end users, that's 250 moves a year. Now, users basically move themselves," Dunkerley says.

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He said he keeps eight digital phones out of 1,000 functioning for peace of mind. 51276

Wexler is a freelance writer in California's Silicon Valley. Contact her at joanie@jwexler.com.

Small Project Works Out The Kinks

Drug maker builds test case for worldwide VoIP rollout.

BY MATT HAMBLEN

LAST AUGUST, global pharmaceutical maker GlaxoSmithKline PLC put 400 IT workers in a new building in Durham, N.C., on a VoIP test network that would serve as a proving ground for future rollouts worldwide.

The company, which began exploring VoIP in late 2003, started with the goal of building an all-IP system and brought together a team of 10 internal voice and data engineers to work on the project, says Charles Goodall, manager of global voice technology and architecture.

The team built an IP LAN using Catalyst 6500 switches from Cisco Systems. But it eventually settled for a hybrid of IP and circuit-switched technologies with a Siemens AG HiPath voice system, partly so it could continue to serve a number of circuit-switched phones, Goodall says.

All told, hardware and software costs for the Durham test site were about $1.6 million: $1 million for Cisco gear, $500,000 for 500 OptiPoint phones and the Siemens HiPath 4000, and $100,000 for Avaya messaging software.

To reduce cabling costs and obtain related savings from a converged network, the planners decided to run one cable to each desktop for both PCs and phones, Goodall says. About 25 of those users are testing softphones over the system, giving them voice service through a PC equipped with a microphone.

"Service has been excellent, and the users have not noticed a difference, which is a good thing," Goodall says.

The company has set a five-year goal to improve mobile connectivity from the current level of 30% of its 100,000 workers at any one time to 50%. That initiative will put a premium on having data and voice, as well as video, running together, says Goodall.

VIRTUAL TEAMING

The most challenging aspect of the Durham project was the newness of IP telephony technology, Goodall says. "So we expected bumps and learning curves and did our homework and gave ourselves time," he says. "We learned that a network assessment upfront is very, very important." It helped that GlaxoSmithKline talked to other companies that had similar projects, Goodall adds.

Clay Swenson, project manager and GlaxoSmithKline's manager of U.S. voice services, says the biggest obstacle to overcome was getting the company's voice and data networking teams to more effectively communicate with each other. "There was a tremendous amount of discussion among the teams to make decisions about how the new blended network should be designed and configured," he says.

The teams remain separate entities but are "committed to working as a virtual team if necessary," he adds. Because of the success of the virtual-team setup, Swenson says he doesn't expect the voice and data crews ever to be permanently combined, even as VoIP technology is implemented elsewhere at GlaxoSmithKline. As a result of the project, the two sides developed a stronger relationship than before, says Swenson.

Jeff Snyder, an analyst at Gartner Inc., says it's "absolutely essential for VoIP implementations to use a joint team" of voice and data engineers. Snyder says GlaxoSmithKline did well to start with a test case and a

Continued on page 34

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CASE STUDY

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THE SEATTLE TIMES CO.

PROJECT SCOPE 1,150 IP handsets across 25 sites

KEY VENDOR Avaya

CHALLENGE Running VoIP over aging cabling infrastructure

BENEFITS Simplified both PBX management and the annual moves of 25% of the workforce

UNEXPECTED HURDLE Dot-com bust and Sept. 11 left the company with no budget for new cabling plant required for VoIP

UNEXPECTED REWARD Came in on budget and reduced monthly phone bills by 20% to 25%

Small Project Works Out The Kinks

Drug maker builds test case for worldwide VoIP rollout.

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Wexler is a freelance writer in California's Silicon Valley. Contact her at joanie a jwexler.com

GLAXOSMITHKLINE PLC

PROJECT: [illegible] AS1.6 million project involving 400 users and 500 phones

PARTNERS: Siemens Communications Systems and Avaya

CHALLENGE: Leading a team of voice and data engineers

BENEFIT: First step toward a more mobile global workforce

UNEXPECTED REWARD: More than 10% cost reduction in moves, adds and changes

The company has set a five-year goal to improve mobile connectivity from the current level of 30% of its 100,000 workers at any one time to 50%. That initiative will put a premium on having data and voice, as well as video, running together, says Goodall.

VIRTUAL TEAMING

The most challenging aspect of the Dorham project was the newness of IP telephony technology, Goodall says. "So we expected bumps and learning curves and did our home work and gave ourselves time," he says. "We learned that a network assessment upfront is very, very important." It helped that GlaxoSmithKline talked to other companies that had similar projects, Goodall adds.

Clay Swenson, project manager and GlaxoSmithKline's manager of U.S. voice services, says the biggest obstacle to overcome was getting the company's voice and data networking teams to more effectively communicate with each other. "There was a tremendous amount of discussion among the teams to make decisions about how the new blended network should be designed and configured," he says.

The teams remain separate entities but are "committed to working as a virtual team if necessary," he adds. Because of the success of the virtual team setup, Swenson says he doesn't expect the voice and data crews ever to be permanently combined, even as VoIP technology is implemented elsewhere at GlaxoSmithKline. As a result of the project, the two sides developed a stronger relationship than before, says Swenson.

Jeff Snyder, an analyst at Gartner Inc., says it's absolutely essential for VoIP implementations to use a joint team of voice and data engineers. Snyder says GlaxoSmithKline did well to start with a test case and a

Continued on page 54

Continued from page 33

small pool of softphone users. Picking a new building and fully testing the data network first were key to the company's early success, he adds.

According to Goodall and Swenson, end-user training was a nonissue, partly because users learned what they needed through online training. And Goodall says the planners spent time ensuring that the network was designed properly to provide security and sufficient quality of service for voice. "That worked [on] Day 1," he says.

Because end users were facing several changes in addition to the IP telephony, including moving to a new building, the goal was to make the new phone service the least of their problems, says Swenson. To overcome initial concerns, planners gave live demonstrations so users could get accustomed to the phones before the installation.

EASIER MOVES

GlaxoSmithKline has seen some tangible cost benefits as well. Because workers can move phones themselves, the company's outside contractor has reduced its annual fee of $35,000 for moves, adds and changes by more than 10%, Swenson says. In addition, IP telephony makes it easy for a mobile worker to use any available desk when he's in the office, and GlaxoSmithKline can keep its total office space smaller, which could ultimately reduce real estate costs by more than 20% a year, Goodall says.

And because videoconferencing is run over the IP network, about $200,000 in annual charges for the ISDN have been cut. Goodall says that as more offices move to IP voice, phone bills for calls between GlaxoSmithKline offices will eventually be eliminated. Both Swenson and Goodall say it's still too early to judge the value of some combined voice and data features, such as the softphone or a universal company directory used to help make calls quickly anywhere in the world.

Swenson says that despite cost reductions, the project's goal wasn't to get a quick return on investment, but rather to learn about an essential future technology.

"Right now, we are in strategy mode for IP deployment globally," Goodall adds. "We are going to IP, but it's a matter of building a strategy and architecture." 51406

Wireless Joins Hospital's VoIP Mix

Rollout slows when backup plan shifts. BY JOANIE WEXLER

CASE STUDY

WHEN ERLANGER Health System began deploying VoIP technology in 2002, it wanted to simplify and lower the cost of moving phones when employees changed locations.

Since then, however, the 28-hospital system, based in Chattanooga, Tenn., has added wireless VoIP phones so caregivers can communicate when mobile. It's also testing multimedia IP applications to improve scheduling efficiency and eventually allow physicians to conduct patient consultations via videoconference, says John Haltom, Erlanger's network director.

IP PBXs, unlike their proprietary circuit-switched counterparts, convert phone numbers to IP addresses. IP addresses can be assigned automatically by Dynamic Host Configuration Protocol servers when phones come online and even when users "log in" to remote phones on the VoIP network.

Moving IP phones requires little more than unplugging them from the back of a PC or Ethernet switch port and plugging them in elsewhere.

"We figured initial savings were about $40 per phone deployed, based on converging the cabling infrastructures for the computing and phone systems," says Haltom. "But those savings are not nearly as significant as when users move a second and third time."

In the circuit-switched world, moving entails PBX line-card changes, programming and technician time for changing cabling cross-connects, he explains. The whole process can take several days.

DESIGNING FOR RELIABILITY

Erlanger is moving its IP phone population to Nortel Networks' Communication Server 1000E IP PBX over five years. The facility selected the Nortel system for its reliability.

The two other vendor contenders at the time of selection — Avaya (Erlanger's incumbent supplier) and Cisco Systems — both based their IP PBXs on Windows servers.

"We couldn't see banking telephony on Windows," Haltom says. "We couldn't control viruses on our [Windows-based] PCs," which made the system unsuitable for Haltom's goal of 99.999%, or "five 9s," uptime.

Windows for telephony "is a religious and cultural issue," observes Areg Gharakhanian, a vice president at Vanguard Communications Corp., a call center and IP telephony consultancy in Morris Plains, N.J.

"Windows has a reputation for being less reliable than Linux or Unix, but the Windows-based IP PBXs have failover mechanisms. The biggest issue has to do with software patches," Gharakhanian says. "The more Windows servers you have for fail-over, the more patching you have to do."

Erlanger's VoIP project slowed when wireless phones entered the picture. Adding Nortel wireless gear shifted the redundancy and power requirements from the centralized data center to distributed wiring closets. Here, wireless LAN switches connect to ceiling-mounted radio access points. The access points bridge traffic from mobile VoIP phones to the wireless switches, which connect to the corporate network and IP PBX.

Erlanger wanted a common power-management and redundancy scheme for managing the entire distributed VoIP system, including the wireless access points and wired IP phones.

"Adding wireless required us to take a big step backwards and look at pushing redundancy, power and air conditioning — taken for granted in the computer room — out to the wiring closets," says Haltom. "This is a massive infrastructure effort for mission-critical services. Anyone who doesn't

look at it this way is making a big mistake." Erlanger needed its vendor to evolve to meet this requirement, says Haltom. Nortel offered 24-port power over-Ethernet hubs for the wiring closet, but at the time they didn't support dual power feeds, he says. "If the power supply died, 24 users fell off the face of the earth. That wasn't a five-9s environment," Haltom says.

Then the Nortel Passport 8300 Ethernet Switch arrived with fully redundant power-over-Ethernet components for powering wired IP phones and wireless access points. The hospital system could then implement full redundancy in the wiring closet.

HYBRID NETWORK FOR E-911

A hybrid VoIP/time division multiplexing (TDM) architecture has two IP PBXs and eight TDM phone switches. For emergency 911 services on the wired network, Haltom says, all PBXs collapse back to the TDM architecture. The TDM PBXs hook to the public-safety answering point in the municipality that's geographically closest.

Wireless emergency calling is less straightforward. Nortel buys equipment from other manufacturers and customizes its WLAN switches, access points and IP handsets. While the wireless switch software can triangulate a phone call to a handset within a few meters of an access point, no integration has yet been done to communicate that location information to the Nortel IP PBX. The IP PBX, in turn, would pass it along to a public-safety answering point, Haltom explains.

At press time, Erlanger was finishing an 18-month beta test with the Nortel Multimedia Communication Server 5100, which enables presence-management-based functions for about 500 users.

Presence management applications converge VoIP, data, video, instant messaging and location tracking across wired and wireless networks to display users' whereabouts and status. Users click on another user's entry to set up instant messaging, a mobile call, VoIP call or videoconference session.

Eventually, Haltom would like to combine the Multimedia Communication Server 5100 with a computer on a portable audio/video cart. Doctors, who have trouble finding time to see all the patients on their rosters, could consult from home or other locations via videoconference, he says. **51277**

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Call Centers Put On Speed Dial

BY JOANIE WEXLER

CASE STUDY

WHEN A PATIENT in crisis calls Magellan Health Services Inc., it's imperative that a properly trained clinician answers the phone promptly.

The Farmington, Conn.-based behavioral health care company serving mental health and substance abuse patients focused on this requirement when redesigning its call center network 18 months ago. The call volume is huge: Twenty-two call centers across the country collectively handle an average of 30,000 calls per day.

"A live voice must answer every call within 30 seconds," explains Robert Odenheimer, senior vice president of IT operations and telecommunications. "We don't have the option of putting callers contemplating suicide on hold for three or four minutes."

Given this situation, being able to reroute and balance calls across a geographically distributed staff is the principal payback of Magellan's VoIP deployment. "Every site has vacancies we can't fill," Odenheimer says. "Finding qualified, clinically trained staff is our biggest challenge."

By moving from a dial network to a routed VoIP network, Magellan has been able to optimize use of its remote personnel without incurring toll charges. "We learned there are three or four hours every day [across time zones] where a third to half of the staff are not busy," Odenheimer explains. "We knew if we could balance the call load, we could offer better service with fewer people."

Rerouting also reduces the number of T1 access links required at each site and eliminates the need to pay for a long-distance carrier to forward calls to after-hours sites. An incoming call can now be rerouted over the company's frame-relay or Asynchronous Transfer Mode service, reducing the peak number of concurrent calls for which any one site must be optimized. So Magellan doesn't have to overinvest in last-mile T1 bandwidth, Odenheimer explains.

In addition, in one office, the company is saving $5,000 per month by rerouting what would have been intrastate 800-number calls so that they terminate as interstate calls. "Interstate rates are cheaper. We will soon start to experience these savings in our other sites," says Odenheimer, adding that he expects savings to total $500,000 per year.

CONFIGURATION RATIONALE

Magellan currently runs Avaya Definity digital PBXs at five of six sites, each with a VoIP gateway card. Local, in-building calls are still served by digital, circuit-switched handsets; VoIP is used for inter-PBX calling only. Users in VoIP-enabled sites, however, do have softphones from Avaya on their laptops, so they can make VoIP calls.

"Every laptop also has VPN capabilities," says Odenheimer. Users can use the telephony and virtual private network software to dial in remotely and make calls off the corporate network.

Unlike other companies implementing VoIP, Magellan couldn't cost-justify wired IP phones for user moves, in part because groups of personnel tend to relocate together and usually do so once a year, Odenheimer says.

He says the real VoIP return on investment will arrive with wireless LANs, which will eliminate much of the wiring in buildings.

Odenheimer says Magellan is close to deploying wireless and will do so when the cost of access points comes down a bit more. He says he feels fairly confident that he can keep a Wi-Fi network secure.

The company is planning to migrate to Avaya's Linux-based S8700 Media Server for high volume call center environments. At that point, says Odenheimer, all calls will be routed through S8700s in the company's call centers in St. Louis and Columbia, Md.

"Centralizing call center and PBX equipment is one of the primary management efficiencies of IP," says Don Van Doren, president of Vanguard Communications Corp., a call center and IP telephony consultancy in Morris Plains, N.J.

"All the adjunct telephony equipment in a [circuit-switched] environment must be distributed out to each location. With IP, it can be centrally located and managed, and calls can be routed wherever needed," Van Doren says. "This simplifies extending telephony to other centers."

Odenheimer says that Magellan, which uses Cisco Systems WAN access routers for forwarding VoIP traffic among PBXs, also looked closely at Cisco's CallManager IP PBXs. But the company wasn't confident about the reliability of CallManager's Microsoft Windows platform for supporting telephony.

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DEFENDING RELIABILITY

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"We also dedicate the server to CallManager," he says. "It's usually

Continued on page 36

MAGELLAN HEALTH SERVICES INC.

PROJECT SCOPE Backhaul among six consolidated call centers, adding some VoIP softphones

KEY VENDORS Avaya, Cisco Systems

CHALLENGES Combining quality of service and encryption

BENEFIT Balancing call load among skilled (and scarce) clinicians in remote sites using call rerouting

UNEXPECTED WAR $5,000 per month per site in telecom savings

Continued from page 33

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Call Centers Put On Speed Dial

Mental health provider load-balances its distributed staff. BY JOANIE WEXLER

When a patient in crisis calls Magellan Health Services Inc., it's imperative that a properly trained clinician answers the phone promptly.

The Farmington, Conn.-based behavioral health care company serving mental health and substance abuse patients focused on this requirement when redesigning its call center network 18 months ago. The call volume is huge: Twenty-two call centers across the country collectively handle an average of 30,000 calls per day.

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Rerouting also reduces the number of T1 access links required at each site and eliminates the need to pay for a long-distance carrier to forward calls to after-hours sites. An incoming call can now be rerouted over the company's frame-relay or Asynchronous Transfer Mode service, reducing the peak number of concurrent calls for which any one site must be optimized. So Magellan doesn't have to overinvest in last-mile T1 bandwidth, Odenheimer explains.

In addition, in one office, the company is saving $5,000 per month by rerouting what would have been intrastate 800-number calls so that they terminate as interstate calls. "Interstate rates are cheaper. We will soon start to experience these savings in our other sites," says Odenheimer, adding that he expects savings to total $500,000 per year.

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Continued on page 36

Continued from page 35

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Also, CallManager 3.0, launched in 2000, gained automatic fail-over among as many as four servers to ensure system uptime.

Because the calls to Magellan's call centers are about extremely sensitive topics, the organization uses network encryption. And because voice can't tolerate much delay, VoIP packets require packet prioritization to meet quality-of-service requirements.

But using encryption when you're trying to meet QoS requirements can be problematic because, by definition, encrypting a packet conceals priority markings. "Such QoS/encryption problems have held up our deployment," says Odenheimer.

Certain Cisco WAN access routers, however, do enable combinations of QoS and IPsec encryption by copying QoS markings into the new, outside IPsec header using a software feature called Cisco Voice and Video Enabled IPsec VPN, or V3PN.

Still, Odenheimer says that part of Magellan's deployment has "been largely a manual exercise, whereby we turn on QoS with link encryption off, see what's going on, then encrypt the link. We make changes, test, make changes and test." 51280

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Fashion Designer Gets Hip to IP

Overhauls network to converge voice and data. BY JOANIE WEXLER

CASE STUDY

A SUPPORTUNE time for installing IP telephony is when legacy PBXs need replacing or data networks get overhauled. Liz Claiborne Inc. found itself in both situations in 2003 and quickly got busy.

With a significant presence in the New York/New Jersey area, the apparel and accessories giant has been preoccupied with disaster recovery since the terrorist attacks of Sept. 11, 2001, says John Kovac, vice president of IT. That's one reason Liz Claiborne now runs a four-server Cisco Systems CallManager IP PBX cluster in the region. "I could lose three CallManagers and still deliver phone service to everyone," he explains.

Kovac says that if he did have to restore that fourth server, it would take "a couple of hours," compared with the seven days required to restore the configuration of the company's former, aging Siemens circuit-switched PBX. "That was a fair amount of risk we wanted to remediate," Kovac explains.

In mid-2003, Liz Claiborne decided to replace a Sonet-based OC-3 155Mbit/sec. managed data service in metropolitan New York with a private, high-speed Dense Wavelength Division Multiplexing fiber network. "We needed more bandwidth just for the data," Kovac explains. At that point, it seemed reasonable to piggyback voice onto the data network and replace the PBX infrastructure with a more redundant IP infrastructure that also had converged functionality prospects.

The new network connects seven buildings in the New York/New Jersey area, plus offices in Atlanta and California.

By converging data and voice networks onto a routed IP network, Liz Claiborne has reduced its long-distance calling charges and the number of dedicated T1 lines. The company is also moving from a mix of many other vendors' circuit-switched PBX systems in several sites throughout the U.S. Because IP telephony has the advantage of a feature called extension mobility, Liz Claiborne saves on professional services to support moving employees (and sometimes whole departments) from one location to another.

INTEGRATED APPS AND BENEFITS

A huge consideration with the entire infrastructure was the close working relationship among sales, design and manufacturing personnel scattered throughout New York and New Jersey offices. They conduct frequent meetings in various offices, so extension mobility has proved particularly useful, says Kovac.

For example, those who attend meetings at another Liz Claiborne office can log onto a Cisco 7960 IP phone in a conference room and use their personalized buttons to retrieve messages from the Cisco Unity voice-mail system as if they were in their own offices, he says.

For now, the designer and marketer is also making lightweight use of integrated voice/data applications via the XML interface for enhanced phone use.

"If we want to deliver an announcement to an employee or conference room without a PC, we can send messages to the phone screen," explains Anthony Iadisernia, director of IT. "We also have an XML application tied to our global [Lightweight Directory Access Protocol] directory, so users can bring up a directory, click on a name or function and call anyone in the company."

Liz Claiborne is also testing Cisco VT Advantage, an application that layers videoconferencing onto Cisco CallManager and IP phones, to help reduce travel time and expenses. The company expects to go live with the application sometime next year, Iadisernia says.

CALL CENTER IMPROVEMENTS

Liz Claiborne is using the Cisco IP Contact Center Express application suite, which, together with the CallManager IP PBXs, provides automatic call distribution (ACD), interactive voice response, network-to-desktop computer telephony integration and historical call reporting.

For example, the system's ACD feature delivers 800-number calls to an agent specializing in one of Liz Claiborne's 31 fashion brands, integrating the phone system with the agent's desktop and showing a screen with information about the caller.

"We've been able to reduce our abandoned calls by 75% because we can now do better staffing and route calls to appropriate people based on skills," says Iadisernia.

In the circuit-switched world, the company had hard-coded phones designated as ACDs, he says, leaving no flexibility in call-agent location.

"Perhaps the single biggest benefit of IP telephony is it virtualizes the user, so they have no ties to physical equipment," observes Irwin Lazar, a senior analyst at Burton Group Inc.

He points to JetBlue Airways Corp., which uses a centralized Avaya Definity PBX with VoIP card in its call center. Along with IPsec VPN and Digital Subscriber Line connections, the setup allows all of the airline's reservation agents to telecommute, eliminating call center expenses.

Kovac says Liz Claiborne's biggest challenge with the project was organizational. Separate data and voice networks were built and supported by separate organizational teams. Once the networks converged, priorities were confused, because voice staffers naturally protected voice first and data folks did the same for data. If something went wrong with a phone situated between a desktop and a switch port, it wasn't clear who was responsible, and multiple personnel were often contacted.

So the teams were merged and cross-trained. They were then re-divided into a "services" group, which handles user and support issues, and an "infrastructure" group focused on implementation.

"Now, data people aren't making changes to a router that would affect voice, and voice staffers aren't making changes to a switch that will affect data," says Iadisernia. 51327

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LIZ CLAIBORNE INC

PROJECT SCOPE: 3,600 IP handsets in the U.S.

KEY VENDOR: Cisco Systems

CHALLENGE: Organizational re-engineering around newly combined data, voice departments

BENEFITS: Faster disaster recovery; extension mobility for improved productivity; reduced operations, telecommunications and management expenses by 18%

Continued from page 35

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Still, Odenheimer says that part of Magellan's deployment has "been largely a manual exercise, whereby we turn on QoS with link encryption off, see what's going on, then encrypt the link. We make changes, test, make changes and test." 51280

Wexler is a freelance writer in California's Silicon Valley. Contact her at joanie@jwexler.com.

Fashion Designer Gets Hip to IP

Overhauls network to converge voice and data. BY JOANIE WEXLER

AN OPPORTUNE time for installing IP telephony is when legacy PBXs need replacing or data networks get overhauled. Liz Claiborne Inc. found itself in both situations in 2003 and quickly got busy.

With a significant presence in the New York/New Jersey area, the apparel and accessories giant has been preoccupied with disaster recovery since the terrorist attacks of Sept. 11, 2001, says John Kovac, vice president of IT. That's one reason Liz Claiborne now runs a four-server Cisco Systems CallManager IP PBX cluster in the region. "I could lose three CallManagers and still deliver phone service to everyone," he explains.

Kovac says that if he did have to restore that fourth server, it would take "a couple of hours," compared with the seven days required to restore the configuration of the company's former, aging Siemens circuit-switched PBX. "That was a fair amount of risk we wanted to remediate," Kovac explains.

In mid-2003, Liz Claiborne decided to replace a Sonet-based OC-3 155Mbit/sec. managed data service in metropolitan New York with a private, high-speed Dense Wavelength Division Multiplexing fiber network. "We needed more bandwidth just for the data," Kovac explains. At that point, it seemed reasonable to piggyback voice onto the data network and replace the PBX infrastructure with a more redundant IP infrastructure that also had converged functionality prospects.

The new network connects seven buildings in the New York/New Jersey area, plus offices in Atlanta and California.

By converging data and voice networks onto a routed IP network, Liz Claiborne has reduced its long-distance calling charges and the number of dedicated T1 lines. The company is also moving from a mix of many other vendors' circuit-switched PBX systems in several sites throughout the U.S. Because IP telephony has the advantage of a feature called extension mobility, Liz Claiborne saves on professional services to support moving employees (and sometimes whole departments) from one location to another.

INTEGRATED APPS AND BENEFITS

A huge consideration with the entire infrastructure was the close working relationship among sales, design and manufacturing personnel scattered throughout New York and New Jersey offices. They conduct frequent meetings in various offices, so extension mobility has proved particularly useful, says Kovac.

For example, those who attend meetings at another Liz Claiborne office can log onto a Cisco 7960 IP phone in a conference room and use their personalized buttons to retrieve messages from the Cisco Unity voice-mail system as if they were in their own offices, he says.

For now, the designer and marketer is also making lightweight use of integrated voice/data applications via the XML interface for enhanced phone use.

"If we want to deliver an announcement to an employee or conference room without a PC, we can send messages to the phone screen," explains Anthony Iadisernia, director of IT. "We also have an XML application tied to our global [Lightweight Directory Access Protocol] directory, so users can bring up a directory, click on a name or function and call anyone in the company."

Liz Claiborne is also testing Cisco VT Advantage, an application that layers videoconferencing onto Cisco CallManager and IP phones, to help reduce travel time and expenses. The company expects to go live with the application sometime next year, Iadisernia says.

CALL CENTER IMPROVEMENTS

Liz Claiborne is using the Cisco IP Contact Center Express application suite, which, together with the CallManager IP PBXs, provides automatic call distribution (ACD), interactive voice response, network-to-desktop computer telephony integration and historical call reporting.

For example, the system's ACD feature delivers 800-number calls to an agent specializing in one of Liz Claiborne's 31 fashion brands, integrating the phone system with the agent's desktop and showing a screen with information about the caller.

"We've been able to reduce our abandoned calls by 75% because we can now do better staffing and route calls to appropriate people based on skills," says Iadisernia.

In the circuit-switched world, the company had hard-coded phones designated as ACDs, he says, leaving no flexibility in call-agent location.

"Perhaps the single biggest benefit of IP telephony is it virtualizes the user, so they have no ties to physical

equipment," observes Irwin Lazar, a senior analyst at Burton Group Inc.

He points to JetBlue Airways Corp., which uses a centralized Avaya Definity PBX with VoIP card in its call center. Along with IPsec VPN and Digital Subscriber Line connections, the setup allows all of the airline's reservation agents to telecommute, eliminating call center expenses.

Kovac says Liz Claiborne's biggest challenge with the project was organizational. Separate data and voice networks were built and supported by separate organizational teams. Once the networks converged, priorities were confused, because voice staffers naturally protected voice first and data folks did the same for data. If something went wrong with a phone situated between a desktop and a switch port, it wasn't clear who was responsible, and multiple personnel were often contacted.

So the teams were merged and cross-trained. They were then redivided into a "services" group, which handles user and support issues, and an "infrastructure" group focused on implementation.

"Now, data people aren't making changes to a router that would affect voice, and voice staffers aren't making changes to a switch that will affect data," says Iadisernia. 51327

Wexler is a freelance writer in California's Silicon Valley. Contact her at joanie@jwexler.com.

SNAPSHOTS

Telephony Growth Is on the IP Side

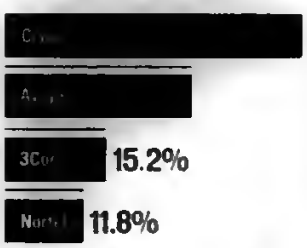
Net growth or decline of installations in the next 12 months:

Traditional PBX	-5.1%
IP PBX	+40.1%
Traditional Centrex	-3.1%
Hosted IP PBX (IP Centrex)	+19.6%

Base: 492 U.S. business purchasers of telephone systems or services
SOURCE: IDC, FRAMINGHAM, MASS., MAY 2004

Top Four Vendors Of IP Phones

Which vendors' IP telephones are in use at your organization?



Base: Survey of 138 U.S. businesses with IP PBXs; multiple responses allowed
SOURCE: IDC, FRAMINGHAM, MASS., NOVEMBER 2004

Common VoIP Pitfalls to Avoid

1. **Underestimating what's required to get ROI from the project.**
2. **Lax project management, leading to missed deadlines and cost overruns.**
3. **Underestimating the resources required to fully implement the strategy.**

SOURCE: DIAMONDCLUSTER INTERNATIONAL INC., CHICAGO, AUGUST 2004

MARK HALL

VoIP Is Scary

Imagine that you deliver an application with 100%, instant-on availability. Security is rock-solid. Costs are dropping. Users never complain. And anytime you upgrade, even if you buy software and gear with new features from a different vendor, user acceptance is always immediate and training virtually nil.

That's your phone system. And VoIP threatens to break it by opening your phone network to the profusion of security hazards your IT environment faces.

That's not to say our POTS (plain old telephone service) is unbreakable. One of the legends of hacking is Cap'n Crunch, who got his nickname from decoding the audible signals on phones by using a whistle from a box of the cereal. The hackers who followed in his footsteps didn't break into POTS for the free long-distance service. They did so to access the computers connected to it. But they don't need POTS any longer; they've got the Internet now.

So users have been able to ring you up when their systems have crashed after someone let loose variants of the SoBig or Klez viruses on your network. But with VoIP, users might not even be able to do that, since its infrastructure is vulnerable to the same attacks by the world's bottomless pit of sociopathic hackers.

VoIP security isn't just important. It's everything. Steven Harris, an analyst at IDC, sums it up simply: "Security is a precondition to a deployment of VoIP."

That's a tough precondition, given that VoIP technology is built largely on Linux or Windows, uses Web application servers, runs over the IP network and, in some cases, uses the browser as an alternative to a handset. Is there anything in that list that doesn't have gaping security holes in it? The list doesn't include the VoIP application. And research firm Gartner claims that about three-fourths of the security attacks in 2005 will strike at the application level. If you think VoIP apps won't be favorite virus targets, you're wrong.

Edwin Mier tested VoIP products from Cisco Systems and Avaya last year for *Network World*, one of our sister publications, and concluded that while security is "possible," it's so complex and vendor-specific that only the bravest and the smartest will deploy it widely [QuickLink 51590]. He left out the foolhardy.

So, why on Earth would any sane IT manager want to get involved with a project as risky as VoIP? Well, your CFO likes it, for one. IDC, among others, is telling him that 20% savings on telco charges "is common." For companies that run up millions of dollars per month in phone costs, that kind of savings can be very compelling.

But compelling enough? Mike Hrabik, chief technology officer at Solutionary, which does security risk management in Omaha, says IT managers need to be aware that VoIP systems must be patched for security as often as your app servers. However, he warns, some VoIP vendors lag as much as 30 days with patches for the OEM systems they deploy, leaving your phone network vulnerable even after you've patched the IT side.

Hrabik, whose company uses VoIP for internal and some branch-office connections, thinks cost savings are nice, but the best reason to use VoIP is to deliver more-productive applications, such as integrating both voice mail and e-mail so users can get all of their messages from any device — cell phone, laptop, PDA or whatever. For a company with a large field sales and support organization, that kind of application could generate more dollars in sales than it saves in telecommunications costs.

Combining substantial cost savings with a significant productivity boost might indeed be worth the risk of jumping into the shallow end of the VoIP pool to get comfortable with the technology.

Jim Vale, a product manager at network management and analysis firm Network General in San Jose, says there are some basic ways to design a secure VoIP network. First, conduct a comprehensive vulnerability analysis of your network and of the VoIP gear before you attach anything to your network. Next, segment your VoIP traffic, which isolates security problems and has the added benefit of dedicating that segment for streaming protocols used by voice. Also, apply quality-of-service rules for your IP traffic, assuring priority for streaming data. Dropped calls and poor aural performance can be indicators of a security problem. Finally, monitor like crazy.

Rolling out VoIP only to save money isn't worth the risk. Coupling savings with a powerful application might make it worth a very careful try. But just barely.

VoIP A MOVING TARGET

Telecom managers will have their hands full securing VoIP networks. Experts say layered security is the best way to protect them: **QuickLink 51540**

Advertising Supplement

IT Careers: Defense, Security Offer Opportunities Aplenty

While the demand for information technology professionals continues to stabilize, private contractors and the government are pushing to fill more than 6,000 scientific and technological slots – including more than 2,000 open requisitions for software engineers.

These open jobs were identified in a Quick-Look Survey conducted by the National Defense Industry Association and Aerospace Industry Association. The open "reqs" include positions for all degree levels, from associates through doctoral. By far, the most in-demand talent is for software engineers. The only catch: applicants must have no "disqualifying life events" that would prohibit them from gaining a security clearance.

The findings of the survey were the topic of a December meeting that brought together representatives of corporate America, the federal government and its research laboratories.

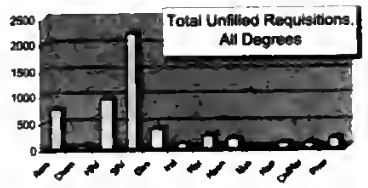
"America has long been the beacon in the world for science and technology. I believe this is being put at risk," says Michael Wynne, Acting Under Secretary of Defense (Acquisition, Technology & Logistics), in pushing for increased attention on security and defense jobs available and the need for the U.S. to maintain its technological edge. "We need to show bright and talented young people that working for the government can change the world."

In addition to identifying key science, math and engineering skill needs, Dr. David Chu, Under Secretary of Defense, Personnel and Readiness, says language and cultural literacy are also important in-demand skills.

According to Ann Young-Ah Lee, operations research analyst for the Office of the Secretary of Defense Personnel and Readiness Directorate, more and more of the basic operational IT jobs are being pushed to contract suppliers such as giants Lockheed Martin and Northrop Grumman. Smaller companies also are winning increasing loads of business for the government, in support of research laboratories, agencies and military branches. These range from setting up systems to evaluating medical services to logistics.

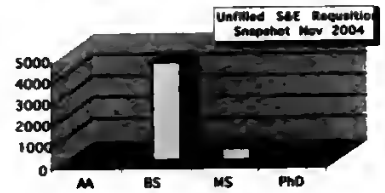
As with the commercial sector, the government is retaining the highest level of design and management of contractors inside. And the challenges are significant, according to Lee. New architectures are being developed to handle multi-agency intelligence and work flow processes. In addition, there's a heavy thread of design and implementation work to link together the mass of security and defense personnel in the field, from Iraq to the local airport. Known as network centric operations, the transformed military and security capability relies heavily on database development and mining. Just as central to this operation is the ability to share some information with coalition members, demanding the creation of high level security protocols and systems.

Once designed, the systems are contracted in large degree – meaning that people working in the defense and security realm must have a combination of technical, procurement and project management skills.



Source: NDIA/AIA Quick-Look Survey

Among the benefits of working for the government is a liberal policy concerning scholarship. Those entering government service with a bachelor's degree are encouraged to receive a master's and there are doctoral programs available as well. The DoD also is expected to push for a new National Defense/Security Education Act that will provide funds for education in return for government service.



Source: NDIA/AIA Quick-Look Survey

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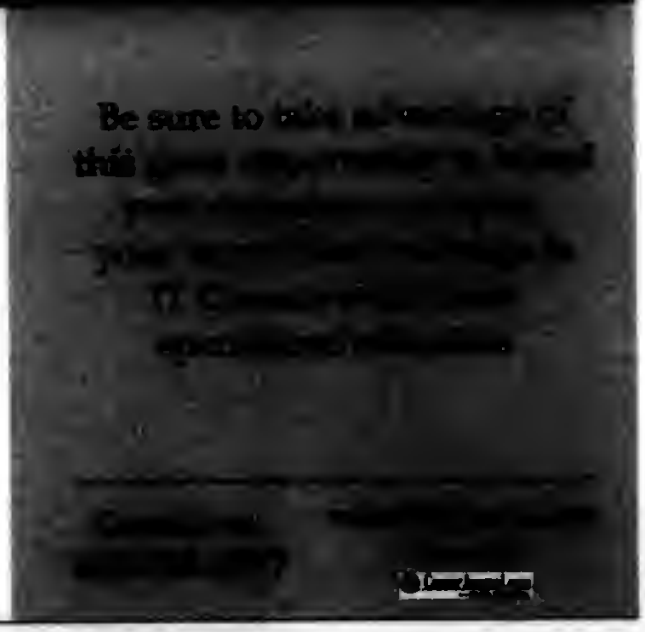

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Programmer/Analyst (multiple positions) needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Analyze, design and develop computer applications for clients located throughout the U.S. Develop voice enabled applications and speech recognition and interactive voice systems. Use TTS/Text 2 Speech. Use Visual Basic, Visual C++, and Sybase on Windows NT and Unix Platforms to develop various applications. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 2 yrs. exp. in the job duties described above or in any computer related occupation which must include the skills listed above. 40hrs/wk, 8am-5pm, M-F. $57,008/yr. Send resumes to: Job No. 30360, P.O. Box 488, Montpelier, VT 05601-0488.

SOFTWARE ENG 2 - Design, develop and test complex operating software applications. B.S. Comp Science/ Engin or equiv & 2 years exp, must be proficient in UNIX, relational databases, LoadRunner, Siebel & Mercury's Test Director Tool. Apply to: Harland Co., Attn: Michael Hoeh, 2939 Miller Road Atlanta, Ga 30035.

Health Systems Analyst Programmer to analyze operational processes and information generation or utilization. Duties include developing, testing, implementing and supporting computer-based information systems, also assisting lower-level analyst programmers with technical problems. Requirements: Bachelors degree in Computer Science or related field and a minimum of 24 months experience C# .NET development, Java development, VisualStudio.NET, strong background in Oracle database and SQL are required. Please send resumes to Christopher Anderton, Vanderbilt University, Informatics Center, B-708 TVC, Nashville, TN 37232-5855.

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Develop/implement inventory program throughout restaurant chain. Evaluate requests for new/modified programs, determine feasibility, cost, compatibility. Develop/implement payroll program, interfaces all systems. Install interface system to forward orders from cashier to kitchen. Manage receipts/expenditures, payroll, tax deposits/reconciliation, profit/loss reporting. Implement point-of-sale system to record receipts by product, maintain all programs. BS Computer Engineering/related field; prof in Visual Basic. 8:00am-5:00pm M-F. Resumes to: AMB, Inc., ATTN: Mostafa Amlashi, 2002 Augusta Street, Greenville, SC 29605.

INTERNET SOLUTIONS ENGNR

Install & maintain HP-UX software. Specific duties incl: (i) setting up scripts & configs; (ii) act as primary operations contact for UNIX & EMC related issues; (iii) provide basic training to other on-site staff; (iv) coordinate backups & failovers; (v) assist in disaster recovery planning; (vi) assist DBAs in hardware capacity planning; & (vii) producing storage reports. Bach degree in Comp Sci, Math, Engrng or Bus. + 2 yrs exp. in position offered or as a Sys. or Applns Engnr/Programmer or Software Engnr req'd. Exp must incl: HP-UX/Solaris Admin; HP-Omniback & MC Service Guard. High mobility preferred. 40 hrs/wk, OT as req'd. 8am - 5pm. $66,730/yr. Submit resume to: Mon Valley Regional CareerLink, Donora Industrial Park, 570 Golfie Drive, Donora, PA 15033-1385. Refer to Job Order No. WEB 464986.

InfoPro Solutions, Inc., is currently seeking Project Managers possessing MS/BS or equivalent and/or relevant work experience. Duties include: Work closely with client project manager and team to develop and execute software implementation plan; act as liaison between client and company; Coordinate InfoPro's training, business and technical analyst resources activities for the implementation project; Ensure delivery dates and commitments are met; Assist client in identification and management of business process transition area; Manage the transition of the project from implementation into post-production support phase. Background in Supply Chain, MRP and/or Inventory control Systems and exp. in the Pharmaceutical industry a desires. Mail resume, references and salary requirements to: InfoPro Solutions, Inc., 238 Littleton Road, #207, Westford, MA 01886.

Health Database System Analyst to conduct biological software engineer and biological data analyses for Vanderbilt Ingram Cancer Center bioinformatics division. Core Duties include designing and developing web-based bioinformatics system for medical (clinical) data and biological data such as microarray and proteomics, creating and implementing various data analyses methods using Perl and C#. Requirements: Master's degree in Computer science or related field or Bachelor's Degree and 3 years of experience. Strong background in Biological or Chemical science required in order to analyze the microarray data or proteomics data. Must know object-oriented programming, designing and developing web-based bioinformatics system on Linux, Apache and MySQL or Oracle Database. Familiar with Microsoft Visual Studio, Dreamweaver MX, Photoshop and PowerBuilder. Experience in analysis is preferred. Please send resumes to Yu Shyr, 571 Preston Bldg, Vanderbilt University, Nashville, TN, 37232-6848.

Network Administrator: Install, configure and secure wired & wireless networks, spyware/virus removal; data recovery. Reqs knowledge & application of TCP/IP/Network Topology and VPN Remote access; Network service and protocols (DNS, DHCP); Surveillance System & Remote Access setup. Reqs travel. Bachelors + exp. Fax resume to Valji @ (954) 973-3775.

Software Engineer (Atlanta, GA) - Responsible for Java based design, development and maintenance of rule-based front and back-end enterprise JSP and EJB web application components on J2EE server. Will utilize SQL, JDBC relational databases to develop and maintain mission critical java based web applications. Prepare "use case" documents, business requirements and flowcharts. Must have a Bachelors degree or equivalent in Computer Science, Engineering or related field and 4 years of experience in the job offered or 4 years experience in a java development position. Experience mentioned may have been obtained concurrently and must include: (i) 2 years experience with J2EE web application server; (ii) 2 years of experience each with SQL and Oracle MS SQL; (iii) 2 years of experience developing rule based applications; (iv) 1 year of experience each with JSP and EJB; (v) 2 years object-oriented design; and (vi) 1 year of experience with object-oriented design patterns. Must have legal authority to work in U.S. Send resume to A. Reed, Gate Gourmet Inc., The Waterstone Bldg, Ste 480, 4751 Best Road, Atlanta GA 30337.

Programmer-Analyst needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Analyze, design, develop, test, and implement web-based applications for clients located throughout the U.S. Use ASP.NET C# .NET Web Services, WMI, ASP and BizTalk Server. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 2 yrs. exp. in the job duties described above or in any computer related occupation which must include the skills listed above. 40hrs/wk, 8am-5pm, M-F. $60,000/yr. Send resumes to: Job No. 30302, P.O. Box 488, Montpelier, VT 05601-0488.

Project Planning (systems analyst) needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Engage in project planning for computer applications and software development projects for clients located throughout the U.S. Analyze projects to determine appropriate activities to insure satisfactory completion. Analyze cost and resource data and coordinate both. Establish key project milestones and monitor progress. Work with technical project managers. Use Primavera Enterprise and Report Writer to accomplish tasks. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 2 yrs. exp. in the job duties described above or in any computer related occupation which must include the skills listed above. 40hrs/wk, 8am-5pm, M-F. $64,000/yr. Send resumes to: Job No. 30295, P.O. Box 488, Montpelier, VT 05601-0488.

Systems Analyst/ Programmer wanted by Fin. services firm in Manhattan. Tu-Sa, 4pm-12am. Bachelor's degree, comp. skills. Fax resume to: 212-509-0394, Attn: Mason.

Senior Network Architecture Engineer (Itasca, IL): Utilize skills of multi-protocol and multi-platform networks to develop networking strategies, network design and sound network management approaches. Use structured methodology and engage in the analysis, design and implementation of complex systems. Participate in the development of requirements, project management, and design and implementation of complex systems. Must have a Bachelor's Degree or equivalent in Computer Science, CIS or related field (Will accept three years of experience in lieu of every 1 year of education) and must have 5 years experience in the job offered or in a position implementing infrastructure solutions. Experience may have been obtained concurrently and must include: (i) 3 years design in architecture of infrastructure including switches, routers and gateways LAN and WAN using Cisco equipment and services; (ii) 3 years each in design with multi-protocol data communication suites TCP/IP, Novell IPX and OSI protocol stacks; (iii) 3 years design and implementation in distance vector and link state routing protocols; (iv) 3 years experience in drafting of technology documentation; (v) 1 year of supervisory experience; (vi) 2 years experience in project management and project management methodologies; and (vii) Must be willing to travel nationwide as needed on a 100% basis. Must have legal authority to work in U.S. Resume to Anthony Murphy (SNAE), Spherion Corporation, One Pierce Place, Ste 550W, Itasca, IL 60143.

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Analyze & eval. existing or proposed software sys. Dvlps, implements & improves programs, sys. & related procedures to process data using in-depth knowledge of software devlpmnt life cycle. Encodes, tests, debugs & installs operating progs. & other sys. software utilizing knowledge of ROMBS environments & prog. languages. Bach. degree in Comp Sci, Math, Engrng or Bus. + 2 yrs exp. in position offered or as a Software Engnr, Prog. Analyst, Sys. Analyst or Tech. Consultant req'd. Exp. must incl: (a) JAVA, XML & C++; (b) Oracle & DB2; & (c) MQ Series, Websphere Business Integration & Tomcat. High mobility preferred. 40 hrs/wk, OT as req'd. 8am - 5pm. $66,730/yr. Submit resume to: Mon Valley Regional CareerLink, Donora Industrial Park, 570 Golfie Drive, Donora, PA 15033-1385. Refer to Job Order No. WEB 465293.

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TTE Technology, Inc. is seeking a Member Technical Staff/Lead Test Engineer responsible for thorough analyses of product requirements and generating system level test plan and procedures, creating project test schedules and requirements/specification analysis leading to the creation of test matrix; and configuration and management of qualified headends and generation of test streams. Must have a Master's degree in Computer Engineering or a similar field and 3 years of experience as a Test Engineer. Salary commensurate with experience. Send cover letter and resume to Chad Secrist, Director, Human Resources, TTE Technology, Inc., 101 W. 103rd Street, Indianapolis IN 46290

Programmer/Analyst needed for Software Development, Services & BPO firm located in Burlington, VT. Job duties include: Analyze, design, develop, and implement J2EE computer applications for various clients located throughout the U.S. Use J2EE tools including struts framework and top link. Also use WebLogic, EJB, UML, and HTML to accomplish tasks. Applicant must have B.S. degree in Computer Science, Business, Math or Engineering. Applicant must also have 2 yrs. exp. in the job duties described above or in any computer related occupation which must include the skills listed above. 40hrs/wk, 8am-5pm, M-F. $65,000/yr. Send resumes to Job No. 30293, PO Box 488, Montpelier, VT 05601-0488.

Mphasis Corporation has multiple openings for the following positions at its offices in New York, NY, Memphis, TN, Houston TX, San Mateo, CA and unanticipated client sites throughout the U.S.: System Analyst, Software Engineer, Project Manager, Management Analyst, Sales Engineer, Business Development Manager, Finance Manager. Please send resume, salary history and position applied for to 460 Park Avenue South, Suite #1101, New York, NY 10016. Attn. H.R. Manager

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AARON CONSULTING INC. 8
ACCENTURE LTD. 10
ACTIVANT CORP. 28
ADVANCED MICRO DEVICES INC. 4,10
AHOLD USA INC. 10
AIRESPACE INC. 4
AL TERRAPIN INC. 28
AMERICA ONLINE INC. 28
APPLE COMPUTER INC. 44
APPLE INC. 28
ASSENTIAL SOFTWARE CORP. 28
AVAYA INC. 10,28,28,34,37
AVNET INC. 1
BANK OF AMERICA CORP. 8
BMC SOFTWARE INC. 8,8
BORLAND SOFTWARE CORP. 8
BRAINBUILDER INTERNATIONAL 37
BROCADE COMMUNICATIONS SYSTEMS INC. 4
BURTON GROUP INC. 10
BUSINESS OBJECTS SA. 4,28
CANA CAFE LAVANA 10
CAMBRIDGE UNIVERSITY 10
CANADIAN IMPERIAL BANK OF COMMERCE 10
CAPGEMINI US 1
CERNANT CORP. 6
CHINA EDUCATION AND RESEARCH NETWORK INFORMATION CENTER 10
CIENA 8
CISCO SYSTEMS INC. 4,8,28,28,37, 39,39,39,39,39,39,39
CITRIX CORP. 28
COMPUTER ASSOCIATES INTERNATIONAL INC. 8
CUSEZI, INC. 8
CURRENT ANALYSIS INC. 28
DIAMOND INFORMATION INDUSTRY CO. 10
DECORATIVE CONCEPTS INC. 1
DELOITTE & TOUCHE USA LLP 28
DHL 1
DIAMONDCLUSTER INTERNATIONAL INC. 28,37
DOW JONES & CO. 37
DRUGSTORE.COM INC. 28
DUKE INDUSTRIES INC. 1
EBAY INC. 28
EDUCAUSE 7
EFW INC. 8
ELSIT SYSTEMS LTD. 8
EMC CORP. 8
EMERGENCY MEDICAL ASSOCIATES 4
ENRON CORP. 28
ENTERPRISE APPLICATIONS CONSULTING 1
ENTERPRISE STRATEGY GROUP INC. 8
ERLANGER HEALTH SYSTEMS 34,36
EXPEDIA.COM CORP. 8
FBI 4
FEDERAL RESERVE BANK 8
FEDERAL SOURCES INC. 10
FIBERGRAND NETWORKS INC. 8
FIRST HORIZON NATIONAL CORP. 8
FLORIDA COMMUNITY COLLEGE AT JACKSONVILLE 16
FORRESTER RESEARCH INC. 4,28
FRONTSTREAM TECHNOLOGIES INC. 8
GARTNER INC. 1,4,8,8,10,28,37
GENUITY CAPITAL MARKETS 10
GEORGE MASON UNIVERSITY 7
GLAXOSMITHKLINE PLC 28,34
GOOGLE INC. 10
HARVARD BUSINESS SCHOOL 1
HUDSON GLOBAL RESOURCES 10
INFERSON SOLUTIONS CORP. 28
IBM 8,8,8,10,28
IDC 8,8,37
ILYFE SYSTEMS AG 4
IMPACT INNOVATIONS GROUP LP 28
INFORMATICA CORP 28
INFORMATION BUILDERS INC. 28
INPUT 10
INTEL CORP. 4,8
INTELIUMVERSE LLC 10
INTERNATIONAL BLACKBERRY USERS GROUP 12
INTERNATIONAL QUALITY & PRODUCTIVITY CENTER 37
ITKI SOFTWARE CORP. 28
J.P. MORGAN CHASE & CO. 8
JETBLUE AIRWAYS CORP. 10
KFORCE INC. 8
KLEE ASSOCIATES INC. 7
LANDESK SOFTWARE INC. 8
LAKEWALL NORTH AMERICA LLC 8
LENOVO GROUP LTD. 10
LEVERAGE PARTNERS INC. 37
LIGHTBURST TECHNOLOGIES INC. 8
LIZ CLAIBORNE INC. 10,28
LOTUS DEVELOPMENT CORP. 10
MARELLA HEALTH SERVICES INC. 34,36
MEDIATA CORP. 8
MEDICINALIFE CORP. 28
MERIWEST CREDIT UNION 4
META GROUP INC. 1
METRO AG 8
MICROSOFT CORP. 1,4,8,8,34, 10,10,28,44
NATIONAL ASSOCIATION FOR STOCK CAR AUTO RACING 10
NATIONAL MEDICAL HEALTH CARD SYSTEMS INC. 28
NATIONAL RETAIL FEDERATION 8
NEWBYTES RESEARCH LLC. 28
NETEZZA CORP. 28
NETWORK APPLIANCE INC. 8
NETWORK GENERAL CORP. 37
NEXTPAGE INC. 8
NORTEL NETWORKS CORP. 8
NORTEL NETWORKS LTD. 28,34
NOVELL INC. 8,28
O.C. TANNER CO. 1
OPENWAVE SYSTEMS INC. 8
ORACLE CORP. 1,28
PEOPLESOFT INC. 1,28
QUEST INTERNATIONAL USERS GROUP 1
RESEARCH IN MOTION LTD. 10
RSA SECURITY INC. 37
SABRATEC LTD. 10
SALESFORCE.COM INC. 4
SANS INSTITUTE 10
SAP AG 1,4,8,33
SAP AMERICA INC. 1
SAS INSTITUTE INC. 28
SCHNITZER STEEL INDUSTRIES INC. 1
SCIENCE APPLICATIONS INTERNATIONAL CORP. 4
SEAGATE TECHNOLOGY LLC. 28
SEATTLE TIMES CO. 28
SIEBEL SYSTEMS INC. 8
SIEMENS AG 10,28
SIEMENS CORP. 28
SOCIETY FOR INFORMATION MANAGEMENT 28
SOFTWARE AG 10
SOLUTIONARY INC. 37
SPIRE CONSULTING LLC 10
SPSS INC. 28
STANFORD UNIVERSITY 37
STOP & SHOP SUPERMARKET CO. 8
SUN MICROSYSTEMS INC. 4
SUNTRUST BANKS INC. 8
SWANSEA UNIVERSITY 10
SYBASE INC. 28
SYMBOL TECHNOLOGIES INC. 8
TAMELA GROUP INC. 8
THE CHARLES SCHWAB CORP. 28
THE CHRONICLE OF HIGHER EDUCATION INC. 1
THE CLEARING HOUSE 8
THE HACKETT GROUP INC. 28
THE HOME DEPOT INC. 10
THE INSIGHT RESEARCH CORP. 28
THE MOZILLA FOUNDATION 10
THOUGHTWORKS INC. 28
TIME WARNER INC. 28
TOWERGROUP 8
U.S. DEPARTMENT OF HOMELAND SECURITY 10
U.S. DEPARTMENT OF THE NAVY 10
U.S. NAVAL ACADEMY 10
U.S. SECURITIES AND EXCHANGE COMMISSION 8,10,10
UNIVERSITY OF CALIFORNIA, BERKELEY 1
UNIVERSITY OF CALIFORNIA, LOS ANGELES 1
UNIVERSITY OF GEORGIA 1
USERFUL 28
USF&G INSURANCE CO. 28
VANGUARD COMMUNICATIONS CORP. 34,36
VERIZON INC. 8
WEBFONTE ARCHIVE SERVICES LLC 10
WAL-MART STORES INC. 10,28
WALLACE WIRELESS INC. 8
WELLS FARGO & CO. 8
WERNER CO. 1
WIKIED INC. 10

Continued from page 1

PeopleSoft

sider a migration, said Pond. He is also president of the Quest International Users Group, which is made up of companies running applications from the former J.D. Edwards, now part of PeopleSoft.

If the team decided to switch, the process would be complex, requiring any new ERP system to be integrated with the steel company's other applications in addition to data conversion and personnel retraining, Pond said.

There's the rub for any user thinking of changing vendors. "There is a huge switching cost, almost insurmountable and unjustifiable unless you're on your knees and/or cannot complete a migration to your new ERP [system]," opined David Conn, director of corporate logistics at Werner Co. The Greenville, Pa.-based ladder maker is a PeopleSoft EnterpriseOne shop.

"I think the ERP vendor owns you unless you don't care whether you stay on the upgrade path and are self-supporting," Conn said. "I can't imagine there are many Fortune 1,000 companies who fit that profile."

Left in Limbo?

Absent any specific plans from Oracle, PeopleSoft users are in limbo, said Robert Robinson, business systems supervisor at Durr Industries Inc., an automotive supplier in Plymouth, Mich. Until Oracle makes its plans public, Durr can't determine whether a switch will be needed. Robinson ooted that SAP and Microsoft are already "wolves at the door."

> **"You just can't rip out something that supports hundreds of mission-critical processes."**
>
> **ROBERT JENSEN,** CITY OF LOS ANGELES

The city of Los Angeles, an Enterprise shop, will wait for the next several years to find out what sort of hybrid PeopleSoft/Oracle suite will be developed. "Depending on that outcome, we may upgrade or may evaluate other products, or we may just decide to ride it out until 2013," when Oracle says it will stop supporting the product, said Robert Jensen, assistant general manager of the city's Department of General Services. "You just can't rip out something that supports hundreds of mission-critical processes."

"I think that the disincentives for migration will keep a lot of PeopleSoft customers in the Oracle customer base for some time, even if the customer is looking for a way out," said analyst Joshua Greenbaum at Enterprise Applications Consulting in Berkeley, Calif.

On the support front, however, one company has already turned from PeopleSoft to a third party to maintain its PeopleSoft applications. Decorative Concepts Inc., a Milford, Ohio-based maker of floral and outdoor decorations, agreed to switch last month in large part because of the Oracle merger, Bill Means, vice president of IT, said in an e-mail. "I suspect a lot of people will be defected by this time next year," he said.

On Feb. 2, help desk and maintenance support responsibilities will be turned over to Klee Associates Inc. in Cedaredge, Colo., Means said.

51947

Continued from page 1

DHL

The program aims to reward and recognize U.S. IT workers on a continual basis with perks ranging from verbal praise by a manager at a staff meeting to gift certificates or e-mail notes from a senior IT executive. The goal, said DHL CIO Steve Bandrowczak, is to create a world-class working environment that helps the company attract and retain top-notch employees.

"I haven't seen any examples of this recently," said Rob Austin, a professor at Harvard Business School.

DHL's employee-driven recognition and rewards program "is a really good idea," said John Parkinson, senior vice president and chief technologist for the Americas region at Capgemini U.S. in Chicago. "A top-down approach tends to create programs that managers would like, not what employees would like."

The effort under way at DHL is "really about changing the culture" of the IT organization, said Bandrowczak, whose U.S. data center is in Scottsdale, Ariz.

Bandrowczak and other DHL executives began exploring the concept of a reward/recognition program in September, after the company conducted a survey of its U.S. IT staffers. The workers indicated that they wanted senior management to acknowledge their accomplishments in more meaningful ways, said Tony Treglia, human resources director at DHL.

As part of the program, DHL has 20 teams of IT workers gathering input from their peers on topics ranging from interpersonal communication to idea and process diversity, Treglia said.

DHL, which is launching a parallel program with its 500-person national billing center in Houston, plans to gather the input from its IT workers and come up with specific reward and recognition programs that will be rolled out by the end of next month, said Treglia.

"What makes this different than a lot of programs with cash bonuses is that DHL is using recognition as a powerful tool on a continual basis," said Chester Elton, a consultant at O.C. Tanner Co., a Salt Lake City-based employee-recognition consultancy that's working with DHL. "This isn't a one-time thing like, 'Hey, let's blitz everyone with T-shirts and ball caps.'"

Bandrowczak, previously CIO at Phoenix-based Avnet Inc., said the recognition program wasn't established in reaction to poor morale or other staff problems. "We want to be one of the most exciting places to work in the [Phoenix area], and we haven't gotteo there yet," be said. The turnover rate within the 1,200-person U.S. IT division is now at about 9%. Treglia said DHL hopes to eventually bring turnover down to around 5%.

Maria Schafer, an IT labor analyst at Meta Group Inc. in Stamford, Conn., said DHL's employee-recognition efforts make sense as part of an effort to improve employee retention. "The reasoo you focus on a better retention plan is to avoid the higher cost of turnover and create a more productive environment, which will produce a stronger culture long term," she said.

Schafer said she believes that more companies should follow DHL's lead in taking on the issue proactively. She noted that as a growing number of baby boomers reach retirement age, fewer new IT workers will enter the workforce. The result: a tightening of the U.S. IT labor market over the next 10 years.

> **"We want to be one of the most exciting places to work ... and we haven't gotten there yet."**
>
> **Steve Bandrowczak, CIO, DHL**

Bandrowczak and other DHL executives said they don't have a return-on-investment target for the carrot-a-day program, nor could they quantify the investment they have made in the effort. Still, they do believe that a happier IT workforce will ultimately benefit the company and its bottom line.

"If we have a very happy workforce and one that feels empowered and engaged, they are likely to bring more value to DHL and to our customers," said Gary Griffin, head of DHL's Scottsdale data center.

51946

IT Worker Retention Program

COMPANY: DHL

LOCATION: Scottsdale, Ariz.

WHAT IS IT DOING? Launching a rewards/recognition program for 1,200 U.S. IT workers

WHAT IS UNIQUE? 20 teams of IT workers are canvassing their peers to determine the types of rewards and recognition that matter most to them

WHAT IS THE GOAL? To create a world-class working environment for retaining and recruiting IT staffers

WHY CARROTS?

Q&A: DHL CIO Steve Bandrowczak explains the staff recognition program.

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Mini Options

WILL IT MATTER? Will the world really change now that Apple is rolling out a sub-$500 Mac named after a cute little car? Will the Mac Mini have any impact on corporate IT at all? The answers are pretty clear: Yes, no and sure, but not the way Mac lovers might expect.

Let's get the obvious analysis out of the way upfront: A $500 price tag won't make corporate IT shops crave Macs. Heck, if Apple gave them away with a $500 bill taped to each machine, we still wouldn't use them. The transition costs would be too high.

But will the Mac Mini have an impact on us? Probably. And it'll likely almost all be good news.

We're used to writing off Apple as irrelevant because Macs don't run Windows software. (Strictly speaking, they *can*, but it's usually not worth the trouble to make that happen.) There might be some Macs in marketing or some other odd corner of our corporate world. But Macs — with a measly 3% market share in desktop computers, by units shipped — aren't mainstream. They're not for us. That's corporate IT gospel.

But notice: Even at just 3%, there are still only seven companies in the world that sell more computers than Apple does. And most of those seven companies are sweating, because there's not much they can do to innovate or differentiate in the lock-step, beige-box game.

Meanwhile, irrelevant Apple gets to do pretty much whatever it wants. Because corporate IT shuns Macs, Apple doesn't sell to us. It sells to the Mac faithful, who will buy almost anything with an Apple logo. And to small businesses that can't deal with Windows kludginess. And to students who want to be hip. And to grannies who just want something simple they can use to e-mail, surf the Web and look at pictures of the grandkids.

So if Apple wants to abandon floppy disks or sell computers in funny colors or shapes, it can. In contrast, PC makers have been trying since 1999 to get away from the beige tower and legacy features. So far, they haven't even managed to get rid of parallel printer ports.

PCs don't change because corporate IT won't let them. We don't buy Macs, so that's where the interesting things happen — things that sometimes trickle down to us.

This time, the interesting things will probably be price and form factor.

Price? This is the cheapest Mac ever. It's no more computer than customers can get from anyone else for $500, but the "wow" factor and Apple's pricey reputatioo will make it more attractive than an equivalent PC. That will force the low end of PC pricing down even further.

That will drag down the whole PC pricing schedule — and IT will benefit.

Form factor? Where Macs lead, PCs follow. Dictiooary-size PCs haven't moved much in the U.S. in the past. But if the Mac Mini becomes a fad item, PC vendors will finally offer really small PCs that are hard for users to fiddle with.

That sort of PC is easier to lock down than a beige tower. It's easier to support and quicker to swap out. It woo't be for all our users, but it'll be a nice option to have.

What if the Mini takes off? The Mac might edge into being a viable option for corporate IT. Then we'd have three options on our short list: generic Windows PCs, generic Linux PCs and Macs. Remember the "10 and 2" rule: "Ten is too many; two is not enough." It would be *really* good to have three flavors to use in playing vendors off one another.

Of course, if the Mac Mini doesn't take off, we've lost nothing. For corporate IT, there's no downside to the Mini. And any upside will take a year or so to hit us. It'll be a while before we see whether Apple creates as big a buzz with the Mini as its four-wheeled namesake.

In the meantime, we can enjoy the ride. ◆ 51905

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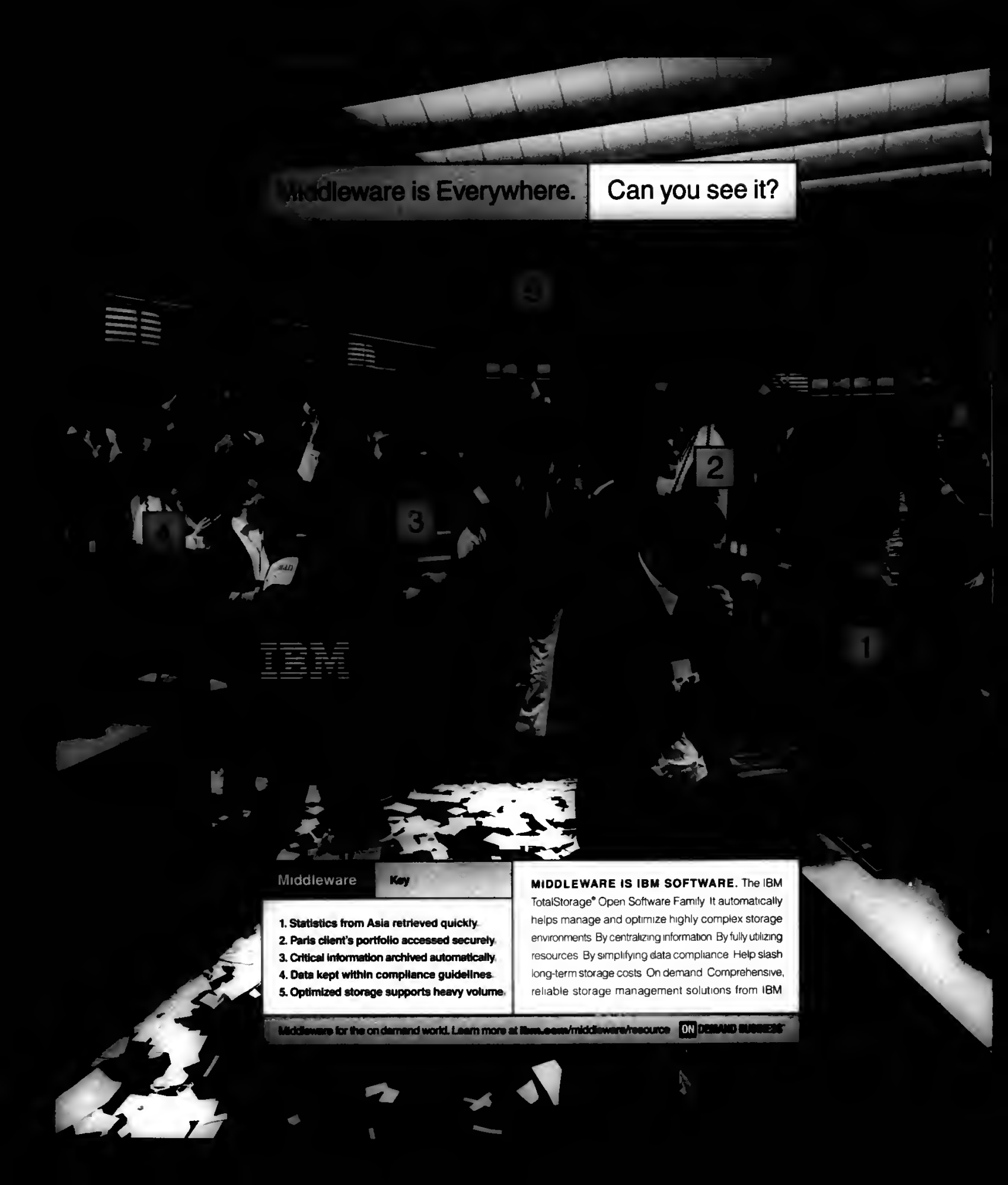
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